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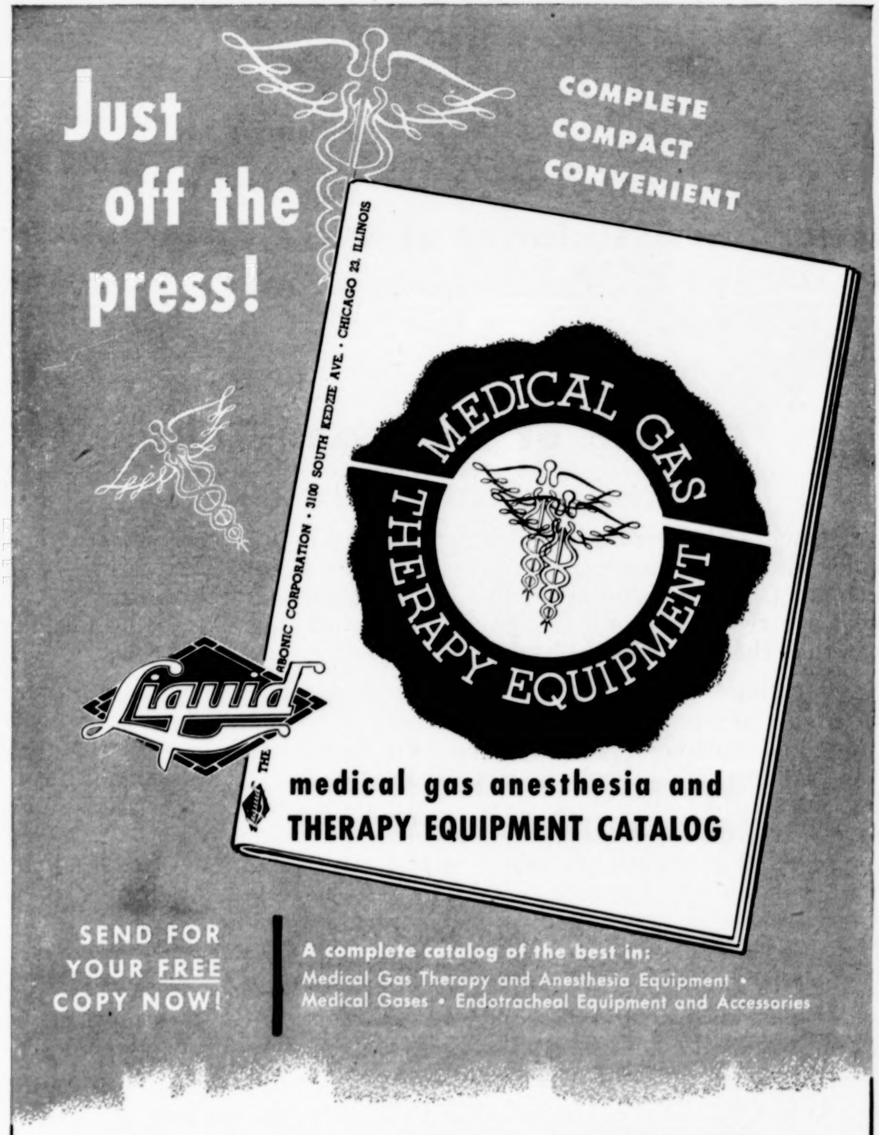
Opinion Review

A.A.N.A. Membership vs Registration?

It is unfortunate that there are Nurse Anesthetists working in States in which they have not registered as Nurses. The Nurse Practice Acts of the different states vary somewhat but most of them require registration. This has nothing to do with any organization but is the state law under which nurses are licensed to practice nursing. A license is "a formal permission from the authorities to carry on a certain business, otherwise illegal." Those who drive cars would not think of driving without their driver's license. Most of us would hesitate to go to a doctor, or even a beautician, who did not have a state license, or to go to a restaurant which had not complied with state laws. It was a proud day when nurses were given State Registration, with the title Registered Nurse. As Nurse Anesthetists, we are nurses practicing a specialty, and so still under the Nurse Practice Acts of the states in which we work. Most of us sign R.N. on our charts and reports but how can we do so if we are not registered and have no license to practice? In these days of Registered Practical Nurses, Licensed Vocational Nurses, and Licensed Technicians of various types, it seems to me a matter of professional pride to keep our "R.N.'s" up to date, aside from the fact that there are legal penalties for practicing nursing without a license. Why don't we all investigate the Nurse Practice Laws in the states in which we are working and make sure that we are "law abiding citizens."—**Minnie V. Haas, R.N., Fort Worth, Texas.**

May we remind you that now is the time to send in the fee for your "STATE LICENSE" renewal for this new year—or, if you have allowed it to lapse—do something about it—reinstate your status. Not only is it an honor and a privilege to be able to use the "R.N." after your name, but according to the laws of the states it is a requirement if you are a Graduate Nurse regardless of your "Specialty" in the field. These are times when one must show proof positive of one's abilities, qualifications and training, and your registration card is such evidence.

Membership in the American Association of Nurse Anesthetists does not in any way cover this phase of your professional standing. So before it is too late, why not be sure that you are registered.—**Pauline E. Henry, R.N., Oak Park, Illinois.**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The Journal of the American Association of Nurse Anesthetists

Vol. XXII No. 2 May, 1954

A Case of Give and Take

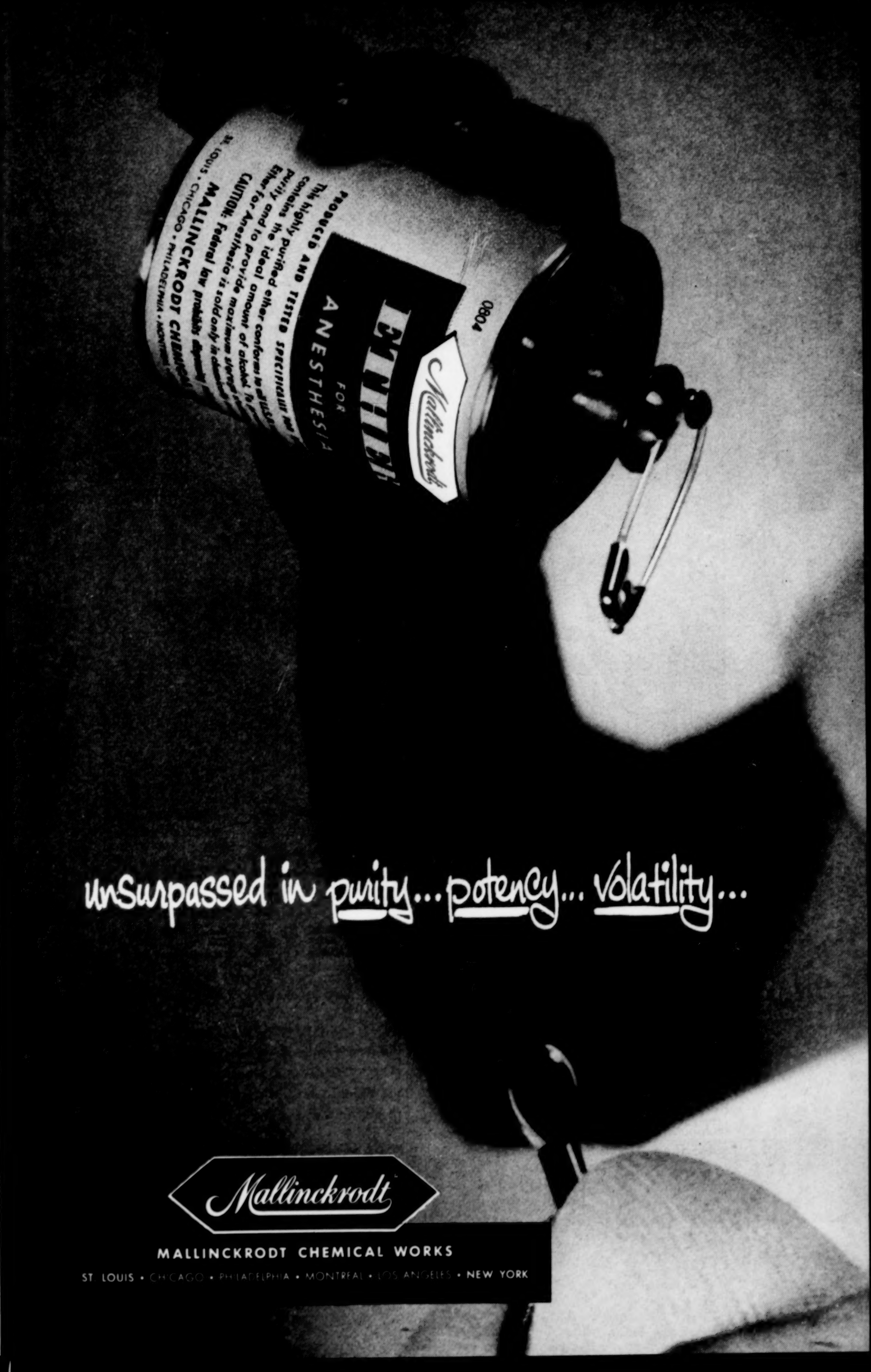
Once each year the American Association of Nurse Anesthetists holds an annual meeting. This year the 21st Annual Meeting will be held in Chicago, September 13-16. As plans begin to develop those who are responsible for the plans and preparations begin to wonder whether the members will enjoy the meeting.

Meetings as well as projects, services and programs of the A.A.N.A. are in reality but evidence of a community of interest of individual members. Rather than two anesthetists getting together and "talking shop," many members come together at the annual meeting where they still "talk shop." Large group meetings are but an extension to a large group of problems of individuals with the added interest and stimulation of many opinions instead of a few. Individuals should be aware of their importance in the meetings of the A.A.N.A. Here the participating individuals contribute to the formulating of policies, making of rules and selecting of officers.

By these actions the individual controls the association. Only by active participation by all members who come to the meeting can we as individuals be able to say "This is my Association. I have contributed to its success (or failure)."

When the time comes to make your plans for the trip to Chicago in September plan not only to visit with friends who will be here, to attend the lectures and visit exhibits, but plan also on being present during the business meetings when the past years' accomplishments are reported, but even more important when the plans for the future are made.

By actively participating in all of the meetings as an interested listener, by positive contribution of ideas or by voting we know that the members will not only enjoy the meeting but will have the satisfaction of knowing that the association as well as the individual has benefited.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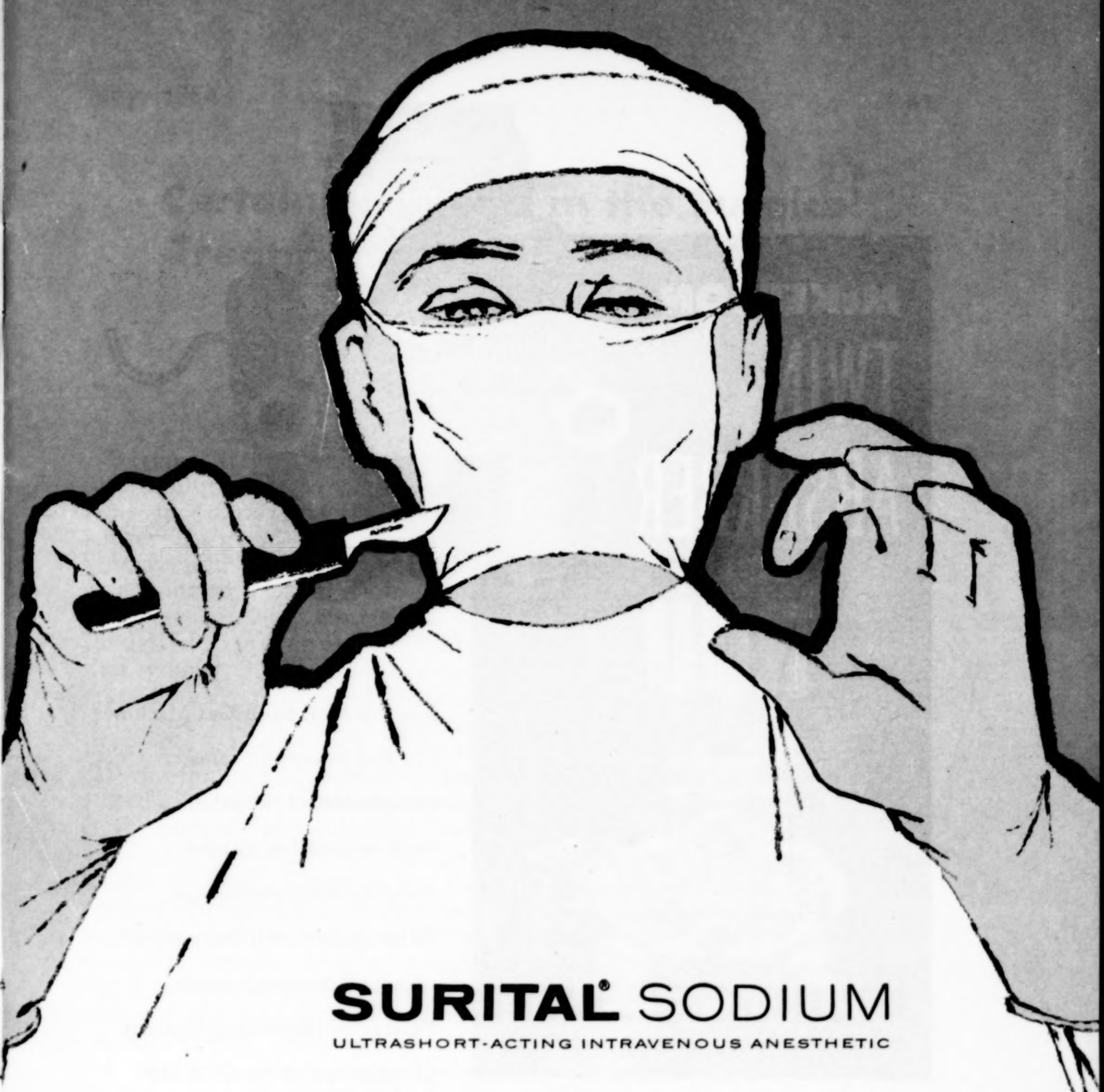

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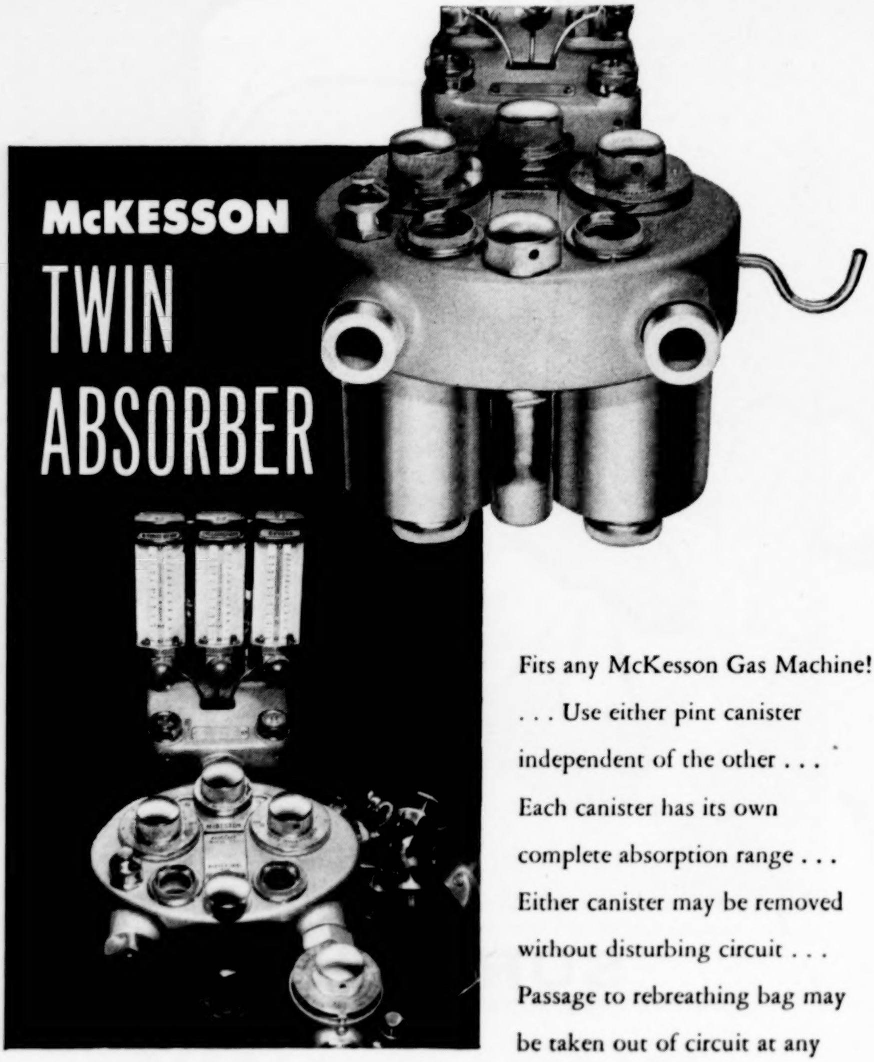

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Certain Problems in the Surgical Treatment of Crippled Children

Leo S. Lucas, M D. *
Portland

Surgical treatment of the crippled child presents many problems in common with pediatric surgery in general. An infant or young child cannot be regarded as a miniature adult. It has long been recognized clinically, although not proven scientifically, that young children do not tolerate lengthy periods of anesthesia. They have not completed their physiological and anatomical development. Stephen[8] has stated that only small deviations from normal physiological balance can be withstood for any length of time. Children are especially susceptible to anoxia and asphyxia. Snyder and co-authors[7] consider anoxia and/or vagal-vagal reflexes as probably responsible for the majority of cases of cardiac arrest. Because of this the slightest obstruction of the airway must at all times be prevented. The tidal exchange of infants and small children amounts to only a small volume. Therefore, apparatus and methods used in administering anesthesia should be specially designed to eliminate deadspace as far as is possible. Macon[4] for this reason recommends open drop ether as the method of choice in the case of infants where the tidal exchange is only a few cubic centimeters. Enlarged tonsils and adenoids, unsuspected loose teeth, foreign bodies introduced by the child into the mouth and nasal passages constitute a potential threat to the airway in the child undergoing anesthesia.

In work with crippled children, surgical treatment of dorsal scoliosis presents a particular problem of maintaining sufficient respiratory exchange. In these patients respiration is impaired to a considerable degree by thoracic deformity and in poliomyelitis to a varying degree of muscle paralysis. In addition, the necessity of having the patient in a corrective plaster jacket and using the prone position for spinal fusion complicates anesthesia. Carefully controlled anesthesia, high oxygen content in the administered mixture, and prevention of carbon dioxide build-up are especially required.

Another consideration of special import in the child is fluid and electrolyte balance. These two factors are interdependent. As is stated by Mitchell and Nelson,[5] in children the require-

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*Chief of Orthopedics, Oregon Medical School; Chief of Staff, Shriner's Hospital, Portland, Oregon.

Read before the Twentieth Annual Meeting of the American Association of Nurse Anesthetists, San Francisco, August 31, 1953.

ments for water exchange in proportion to body weight are far greater than in adult life, and fluid balances are more easily disturbed under abnormal conditions. Fluid balance is far less disturbed in surgery on the spine or extremities than in abdominal or thoracic surgery. Dehydration can follow major orthopedic procedures nevertheless, and postoperative nausea and vomiting at times are severe enough to necessitate intravenous therapy.

Of greater concern to the orthopedist is the matter of the total circulating volume of blood in the child. Newborn infants have a total blood volume of about 500 cc.; at the end of the first year it is 1,000 cc. The loss of 25 cc. in the infant is estimated equivalent to loss of 500 cc. in the adult (Wall[9]). Blackman[1] states that infants and small children should be transfused with at least equivalent amounts of blood lost if it amounts to more than 50 cc.

Careful attention to hemostasis during surgery is therefore of much greater importance than in the case of an adult. The possibility of shock through hemorrhage is much more imminent. A few blood-soaked sponges in an adult operation may not concern the surgeon, but the same loss in a child may be disastrous.

Emotional trauma constitutes another hazard in treatment of children. Lacking adult understanding, the child is more likely to develop anxiety, insecurity, suspicion and resentment. Such mental attitudes may have an important bearing in the final outcome of a procedure calculated to improve physical function. Important factors in the prevention of such a mental status are listed by Jackson and co-authors[2] as: a reasonably adequate adjustment to environment; proper preparation for a specific experience; and, proper modification of the experience to meet the patient's endurance. Careful consideration of the child's fears, gentleness in handling, and reassurance are paramount. Treatment in an institution such as a Shriner's Hospital has the important advantage of making the patient one of a group undergoing a similar experience. Those who have been operated school the prospective patient so that he meets the situation with fortitude and proper understanding, and we, for this reason, like to have the child in the hospital for a few days before undertaking surgery.

In our hospital the anesthetist visits and observes the surgical prospect prior to the surgery, as do the medical and surgical teams. We believe this to be of paramount importance. A quiet talk with the child may allay his emotional fear and give him a better understanding of the ordeal ahead. An anesthetist in a children's hospital must first of all like children; understand the psychological and emotional states of the different age groups. She must have the child's confidence by any means possible before giving the anesthetic—a little affection and kindness and an unhurried approach pay double dividends. We use a separate induction room and the door can be closed. All kinds of gadgets that children like are in this room; paintings, story books, dolls, colored balloons, etc. A favorite doll in a child's arm or a whispered fairy tale during the induction takes the edge off an otherwise unpleasant experience.

Painful or fear-inspiring procedures should be kept at a minimum in keeping with good treatment. Methods employed should be modified, if possible, to make them less of an ordeal. In line with this thought would be the use of preoperative sedation. The administration of morphine to children for this purpose is somewhat controversial (Macon;[4] Collins;[2] Liegh and Belton[3]). However, most authors believe the advantages of smoother anesthesia, and a mentally relaxed patient outweigh the disadvantages. In our hands the use of morphine together with hyoscine in a dosage proportional to weight, similar to that worked out by Knight, has proven safe and satisfactory. Of great aid in the immediate post-operative period has been the administration of an analgesic hypodermic just prior to discontinuing the anesthesia.

In the preparation of the crippled child for surgery, it must be kept in mind that the procedures are for the most part elective. Therefore, if need be, such treatment is best delayed until the patient's physical status is brought to an optimal condition. Careful general examination is indicated, including a comprehensive physical examination, routine laboratory studies, and essential x-ray studies. The child in poor nutritional state should undergo a period of correction under the direction of one competent in pediatrics. The same holds true for a patient suffering a chronic illness.

It is well to mention that children who have been immobilized in body casts for protracted lengths of time are likely to be poorer operative risks than the average patient. In the immediate pre-operative period, the child should again be given a careful examination to insure that no acute illnesses go unrecognized. Further, the patient should be seen by the surgeon immediately prior to surgery, for complications can arise overnight. The presence of such a condition, of course, precludes going on with surgery.

Stephen and Slater[8] state that, in general, any anesthetic that is safe for an adult is safe for the child. This they qualify by saying that the anesthetist must be well versed in the use of the drug administered. For children's orthopedic work, a general anesthetic is preferable. The reasons are: (1) The advantage of having the patient asleep, (2) Flexibility of control, (3) Good muscular relaxation, (4) Avoidance of the use of a needle, such as would be necessary in a regional block, and (5) The advantage of having the patient in a deep enough plane to minimize neurogenic reflexes caused by unavoidable and traumatizing procedures such as osteotomy. The anesthesia should be so controlled that the patient is conscious before he leaves the operating room.

Because of the child's limited tolerance of anesthesia and of blood loss as previously mentioned, surgery must be performed with dispatch. A definite plan of what is to be accomplished and complete confidence in the technic are necessary prerequisites to the operation.

A surgeon should not operate on crippled children unless he is adequately trained in children's orthopedics. He must be duly endowed with the concept that the end result to be obtained is improved function for that individual child.

Many of our patients require a series of operations before that child is completely rehabilitated. The surgical approach to a specific individual must be well planned, thoroughly reviewed, and revised, if necessary, before the surgical attack.

In most cases a surgical procedure cannot be undone. Simple operations on soft tissues such as on tendons, muscles and ligaments may suffice. Amputations, osteotomies and arthrodesing operations are surgically the end of the road and must only be done when the simpler operations cannot succeed or the more radical operations are deemed the original approach of choice.

The problem of hemostasis during operation is generally solved in the case of operation on extremities by the use of a tourniquet. The limb is stripped of blood prior to inflation of the tourniquet to provide a bloodless field. The tourniquet is a wonderful adjunct in limb surgery to eliminate hemorrhage, thus lessening shock. In areas where this means cannot be used, gauze packs can be utilized to control bleeding from minor vessels. This avoids the time consuming practice of clamping and tying. It also results in the avoidance of the presence of excessive foreign material in the wound, an important point because so often the surgery takes place in an area where there is little or no fatty padding between bone or tendon and the skin. Postoperatively, the hemostasis in nearly all cases can be well accomplished by compression dressings or well padded casts.

In orthopedic surgery, as in general surgery, tissues should be handled gently. This applies especially in the case of children's delicate structures. Retraction should be as gentle as fulfills the need for exposure. In suturing, the minimum of material necessary to close the layers should be employed. Excessive tension of the sutures will compromise local circulation, especially in the presence of post-operative swelling. The use of the mallet in preparing the bone for spinal fusion should be avoided, if possible, in the interest of preventing shock. We prefer sharp instruments which, when carefully handled, do more precise work than blunt instruments and are less apt to cause shock to the patient.

Treatment of the crippled child has for its overall objectives the improvement of deranged musculo-skeletal function and correction of disfiguring deformities. The etiology of the conditions dealt with fall under the general classification of congenital defects, infectious or degenerative disease, neoplasms and trauma. Surgery per se is only one of the measures employed in treatment. Physiotherapy and muscle training, bracing and medical therapeutics are equally important. The rehabilitation of the child therefore is a matter of close teamwork between the surgeon, the anesthetist, the physiotherapist, the nurse and all the other trained personnel of the hospital.

SPECIAL CONSIDERATIONS

It would be beyond the scope of this paper to enter into a detailed description of each condition met with in this field. It may be well to broadly indicate the more common entities dealt with and to outline the more common surgical measures employed in treatment.

The most common congenital defects as listed by Shands[6] are club feet and dislocated hips. The specific factors of causation of these are not known. The early treatment of club foot is conservative; namely, wedging casts, adhesive strapping, and gentle manipulations. The deformed extremity is gradually forced into normal alignment. In many cases this accomplishes complete correction, especially if the treatment is begun early. In those that are refractory, the surgical procedures of tendon lengthenings, sectioning of contracted fascia and joint capsules and corrective osteotomies and arthrodesing procedures are resorted to. Congenital dislocated hips are first treated by attempted closed reduction and cast. The defect here consists of an undeveloped acetabulum, or hip socket, with a secondarily underdeveloped femoral head. Should conservative treatment fail, open surgical reduction is done. Soft tissues in some cases may block reduction and must be removed. In some cases the neck of the femur is twisted forward so that when the dislocation is reduced, the leg must be markedly turned inward. This must be corrected by osteotomy of the femur if it is pronounced, and does not spontaneously improve after reductions. In some cases the acetabulum is so poorly formed as to necessitate the building of a bony shelf or roof on the ilium to support the upward thrust of the femur.

There are many more congenital deformities such as absences of digits or limbs, syndactylism, or joined digits, constriction bands, to name a few, which require surgical intervention to improve function and appearance; the latter is sometimes invaluable in bettering the psychological condition of the crippled child.

Scoliotic deformities of the spine with lateral twisting and bending arise from congenital deformities of the vertebrae or as a result of post-poliomyelitic paralysis of the abdominal and back musculature. This condition is treated conservatively by braces and muscle training. Where the condition is a progressive one, the curve is straightened by placing the patient in a hinged corrective jacket and the involved portion of the spine then fused.

Loss of muscle function in the extremities following poliomyelitis creates a need for the most advantageous use of the muscles remaining. Those still active can distort the extremity by their unopposed action. Transplanting the tendons of the active muscles to insertions producing the desired direction of pull, with or without joint stabilization by fusion, and braces, together with muscle training are the usual methods of attacking the problem.

Cerebral palsy produces a problem similar to poliomyelitis in regard to muscle imbalance. Here certain muscles, or groups of muscles through their spasticity overwhelm their antagonists. Thus, it is that the typical scissors gait develops, the adductors of the thigh overwhelming the abductor group. Attempt is made by muscle or tendon section, or by motor nerve cutting to weaken the muscles that are overpulling, or by tendon transplantation to strengthen the weaker antagonists. Unfortunately, the lack of control these patients have over their spastic muscles precludes at best the attainment of more than moderate improvement in the majority of cases.

Bone and joint diseases, due to infection, fortunately are becoming increasingly less common. The crippling effects of these conditions are being prevented in many instances by the use of antibiotics. Credit must also be given to public health measures that have greatly reduced the incidence of pulmonary tuberculosis and osteomyelitis, and consequently the incidence of bone and joint involvement by these organisms. These latter conditions are still met with, however. Immobilization of the part afflicted, general rest, the proper antibiotics, together form the sheet anchor of treatment. Fusion of destroyed vertebrae or joints comprises a secondary treatment.

The treatment of neoplasms of bone consists simply of surgical removal or amputation. In many cases, the location of the tumor, if malignant, necessitates radical ablation or possibly amputation. In only a very few instances does radiation become of aid. The etiology of these growths remains totally unknown. The hope is that the key that unlocks the mystery of their origin will also open the way for more satisfactory treatment and perhaps even prevention.

These above outlined conditions provide the major portion of the work done on crippled children. In addition, there are many more less common deformities and diseases that cannot be discussed here, but which present problems similar to those that have been mentioned.

CONCLUSION

In conclusion, it will be well to remember that the ultimate purpose in the care of the crippled child is to first prevent deformity, if possible, and, second, to correct deformity in order, third, to improve function and last but not least, to improve the appearance in order that this individual may meet life with as much assurance as his or her more fortunate brother or sister. It is especially comforting to the surgeon to have someone sitting at the head of the table in whom he has complete confidence.

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Psychological Preparation of Children for Tonsillectomy Anesthesia

Francis A. Sooy, M.D. *
San Francisco

The psychological preparation of children prior to tonsillectomy was undertaken primarily because of the conviction that it materially decreased the risk attendant to the procedure.

The emotional aspects involved and the detailed description of these may be found in articles by Levy,[1] Jessner et al[2] and the Albany report.[3]

There is an extremely small but significant mortality rate connected with tonsillectomy and in reviewing some of the recorded instances where this tragedy occurred it was noted that the period of anesthetic induction, and the first 24 hours following surgery were the periods of greatest hazard.

Death when it occurs during induction is felt to be the result of cardiac arrest secondary to hypoxia. The role of hypoxia in cardiac arrest has been accepted as one of leading non-manipulative predisposing factors.

It would seem logical then that an attempt to administer an anesthetic to a hysterical child whose oxygen requirements are exceedingly high would be attendant with considerable more risk of hypoxia than in the case of a relaxed cooperative patient.

The situation is further complicated by the fact that frequently the operative procedure is being carried out to correct a series of debilitating ear or throat infections which leaves the child in a less favorable condition to respond to emergency situations.

There is also some evidence to indicate that the prolonged use of cortisone and related drugs may render the patient a poorer risk from the anesthetic and surgical standpoint than if he had not had these drugs.

Hemorrhage and aspiration during the immediate postoperative period may in some instances be related to heavy pre- and postoperative medication which prolongs the recovery period and depresses the cough reflex.

Modern technics of tonsillectomy employing meticulous ligation of all large vessels during dissection have materially de-

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*Associate Clinical Professor, Otolaryngology, University of California School of Medicine, San Francisco, Calif.

Read before the Twentieth Annual Meeting of the American Association of Nurse Anesthetists, San Francisco, August 31, 1953.

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[3] Reducing emotional trauma in hospitalized children. A three year study of 140 tonsillectomized children. Albany Research Project, Albany Medical College, Albany, N. Y.

creased the incidence of immediate postoperative bleeding.

Delayed postoperative bleeding which can occur on the 4th to 7th day ordinarily offers no great problem. Careful pediatric preoperative investigation all but precludes the possibility of an unsuspected blood dyscrasia.

The following procedure was evolved after an informal study of 100 patients was carried out in an effort to evaluate the efficacy of preoperative orientation in allaying the fear of tonsillectomy.

All the children were between 4 and 8 years of age and were office as opposed to clinic patients.

A. **Parent Orientation.** It was felt that most children were apprehensive because their parents were consciously or subconsciously apprehensive. Therefore during the first office visit an attempt was made to reassure the parents and child as to the character, safety and limited discomfort of the procedure.

B. **Patient Orientation.** On the preoperative visit (the day prior to surgery) the child is told in simple narrative form the various stages of his pending hospitalization and the reasons for these (e.g. a crib because of the high sides, etc.)

He is assured that his surgeon will accompany him into the operating room and the mechanics of the anesthesia are translated into simple terms such as "smelling the medicine" or "blowing up the balloon." This, of course, depends on a complete understanding between surgeon and anesthetist.

C. **Minimal Preoperative Medication.** This is a personal preference and is varied from patient to patient and hospital to hospital. The reasons for this preference are as follows: 1. Unavoidable variation in administration. 2. Wide variation in the response of children to barbiturates and opiates. 3. The medication may be unavoidably administered too close to the scheduled time to be effective. Frequently the act of injecting atropine causes more tears and secretions than it suppresses. 4. Decreased respiratory exchange with prolongation of anesthesia, and decreased oxygen intake. 5. Prolonged recovery period.

There are admittedly adequate solutions to these objections such as rectal medication, an adequately equipped and staffed recovery room, and endotracheal anesthesia. The most important of these, the recovery room is still not universally present.

RESULTS

Eighty were cooperative and did not object or offered only verbal rather than physical objections. Eighteen objected to the induction and required verbal and/or manual restraint. The principal emotion was, however, anger and lack of desire to cooperate. Two were terrified and at the suggestion of the anesthesiologist were returned to the ward, heavily sedated and the procedure in each case carried out uneventfully two hours later.

Psychology P.R.N.

Clarene A. Carmichael, R.N., B.S. *
Norfolk, Virginia

Psychological factors are involved in interaction between any two or more people. A prescription compounded from principles and technics derived from research in the field of psychology is available to every nurse anesthetist. There is an unlimited supply of this potent mixture to be dispensed as circumstances require and judicious dosage will appreciably increase the service performed for the patient and the surgeon.

The growth, and indeed the very existence, of that entity known as the nurse anesthetist is dependent upon the ability to establish and maintain amiable relations with the surgeon as well as upon continuation of high quality service. The service rendered by the good nurse anesthetist does not stop with mere scientific knowledge. Nor does the addition of technical ability insure the establishment of the desired relationship.

Naturally enough, each anesthetist must prove to each surgeon that she has the knowledge and ability to give satisfactory anesthesia. Humanly enough, the respect and confidence of the surgeon will be gained only after the anesthetist has demonstrated an awareness of the more subtle responsibilities involved.

Sadly enough, there is a tendency to forget that no matter how many successful anesthetias we may administer we are still nurses. There is no need to go into legal aspects at this time as it is accepted that nurses may give anesthesia only under the direction and supervision of a licensed physician. Our function may include advice or suggestion, never instruction or command.

It is a well known fact that anything going wrong in surgery, from inadequate laboratory data to failure of electric power, is the fault of "that person up there at the head of the table." It is the wise anesthetist who recognizes the function fulfilled by acting as scapegoat.

No one denies the atmosphere of tension which pervades an operating room, but it is often possible to prevent that tension reaching the destructive explosion point by acting as a safety valve. Regardless of what may be said under the stress of the moment, any intelligent anesthetist realizes that the surgeon does not really think that she is deliberately causing the patient to push

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Read before the Carolinas-Virginias Assembly of Nurse Anesthetists aboard the S.S. Queen of Bermuda, May 3, 1953.

*Director of School of Anesthesia for Nurses, Norfolk General Hospital, Norfolk, Virginia.

just to make his job more difficult.

Maybe someday a mechanical device will be perfected to measure the amount of tension present and indicate those times when a complete blow-off should be allowed and those when it is best to exert a little back pressure. Until such a device is in use, we must individually utilize the technics of personal relations to impress the surgeon with our ability as well as gain his personal respect and confidence.

The efficiency of any anesthesia department composed of more than one person must necessarily be affected by the interaction of its component parts. It might be said that a department is only as well integrated and happy as its most unstable and most discontented member.

During the actual administration of anesthesia decisions are constantly being made by the individual, but when this "individual" attitude is carried over into personal relationships it is known by another name—selfishness.

In order to get along with others it is necessary to work in harmony instead of at variance with them. A desire for cooperation brings an awareness of those actions not producing the expected results and, when possible, alteration to more profitable actions. An honest interest in others and a sincere desire to work harmoniously with them is soon apparent and usually begets somewhat similar responses.

Every staff member in a school of anesthesia, by her relationship with the students, is shaping the future of our profession. The educational committees of our Association are constantly improving the strategy of our training program. Here again, to most adequately impress the contents of that program upon the student, our weapons must include patience, tact and tolerance.

Although the young soldiers receive basic training in the classroom, conduct in battle is very greatly influenced by the leadership and guidance of the lieutenants in the field. This is also true of students anesthetists. Here the rule, "Don't do as I do, do as I say" cannot be applied. The students must have the positive example before them.

It is physically impossible for the theoretical instructor to personally supervise every anesthesia given by a student; therefore, the importance of collaboration between theoretical and practical instructors cannot be overemphasized. There are too many important things to be remembered for the student to waste brain space cataloging the likes and dislikes of the various supervisors.

Patience is indispensable to the successful teacher. If the student was already proficient there would be no need for instruction. When mistakes are greeted with horrified yelps the student becomes even more distracted and the surgeon more distressed. Remember also that mistakes demonstrate the dangers of anesthesia far more vividly than a volume of descriptive terms. Is it not better for the mistake to occur when there is someone present to point the way to correction?

If there were only some method for bottling some of our own emotional reactions during our student days and having it to sip as we tend to forget; perhaps a dram or two of that feeling of helplessness, uncertainty and fear would do wonders for the graduate anesthetists' sympathy and understanding of the students' problem.

Our ultimate aim is, of course, the most efficient, beneficial treatment and care of the patient. It should be remembered that this goal is shared with all hospital personnel. Possibly our closest allies in the cause and, therefore those whose cooperation is most vital, are the operating room nurses. Another aim we share with this group is satisfactory service to the surgeon. Only through the closest correlation of the two departments can maximum results be achieved.

The operating room is not the place for a contest. It matters not how well set up the instruments may be nor how well prepared the scrub nurse if the patient is not anesthetized. Conversely, no matter how well relaxed the patient may be, there will be no surgery until the scrub nurse is ready.

Upon entering the field of anesthesia a nurse's sense of values changes drastically. This change occurs, however, in the light of new knowledge. As the operating room nurse has not been exposed to that light, it is unfair to expect her to be aware of our problems. We must therefore take advantage of every opportunity to explain and instruct, but this can be accomplished only with finesse.

Attaining and maintaining the cheerful cooperation of operating room personnel usually necessitates a conscious and constant effort. Many times the anesthetist must go more than what may seem to be half-way.

The same general principles may be applied to the other nurses, whose cooperation must be obtained in the best interests of the patient and for the peace of mind of the anesthetist. So, by making an honest effort to clarify our position as much as possible and by not taking unfair advantage, a smoothly functioning unit may be formed.

Contact with surgeons, members of the department, students and nursing personnel is a recurring event thus allowing opportunity for some degree of adjustment when undesirable responses to administration of the psychological prescription appear. Ideally, the anesthetist visits the patient on the ward the day before surgery. In many institutions, however, this opportunity for psychological evaluation is not provided and the proper approach must be decided upon in the first instant of contact. To win the patient's confidence in the few minutes prior to starting anesthesia is to practice an art.

A rapid survey of normal emotional development may yield valuable information. The first, or original, emotion observed in a newborn is generalized excitement. Stimuli arousing this response include bright light in the eyes, sudden movements, rapping the knuckles and restraint.

At about three weeks it is possible to distinguish an emotion in addition to excitement. This new emotion is called distress and appears in response to discomfort, such as staying too long in one position, when lying awake before feeding time, and when lying on a wet diaper.

Distress later becomes differentiated into anger, fear, disgust and jealousy. Anger and disgust reactions are recognizable during the fifth month and fear is clearly observable at seven months. The important factors in fear seem to be suddenness and painfullness, such as sudden flash of light or loud noise and loss of support.

It should be noted that from the time of birth restraint of movement and sudden stimulation will elicit unpleasant reactions. As it is our intention to prevent unpleasant reactions, we must avoid startling the child in any way. Restraint is necessary to a certain extent, but it should be kept to a minimum. The practice of "mummying" a child before anesthesia is started is as cruel as it is unnecessary and any anesthetist employing this particular form of torture deserves every difficulty brought about by the resultant stormy induction.

It should also be remembered that the emotion most unsettling to the patient and most difficult for the anesthetist to control, namely fear, is not present until the seventh month. Although at this age it will be impossible for the child to understand words, he will understand the tone of voice and the attitude expressed by our behavior.

By the time a child reaches the age of two years the technics of distraction and suggestion may be utilized. Distraction is merely the diversion of attention from the activities of the anesthetist and may be accomplished by telling a story, convincing the child it would be interesting to blow up the balloon, blow bubbles, or simply blow it away. It may also prove beneficial to place a few drops of peppermint water on an open drop mask as this aroma is usually associated with such pleasant experiences as candy or chewing gum.

As the child matures emotionally and becomes an adult the technics of distraction and suggestion must also become more complex. Being in the operating room every day and administering several anesthesias within a few hours makes it very easy to adopt the attitude "just another case". A valuable weapon is lost when we forget that the patient rightly regards a serious operation (to the person undergoing it, any operation is serious) as one of the most important events of his life. He not only appreciates real kindness and sympathy from the anesthetist, but is in a state which readily responds to suggestion.

In addition to making induction more pleasant it is claimed by some that a strong suggestion of muscular relaxation given during induction will reduce the amount of anesthetic agent required. Suggestions concerning muscular relaxation, as well as those directed at minimizing postoperative nausea and vomiting, are, obviously, out of the field of the nurse anesthetist. They are mentioned only to emphasize the extent of response to suggestion and if the power of suggestion is improperly used, adverse response may be just as great.

As a matter of fact, the good nurse anesthetist uses suggestion whether she realizes it or not. The point is she should use it consciously and with an awareness of the effect of certain words and actions on the patient.

By definition the anesthetist is concerned with relief of pain. The extent to which psychological factors influence pain cannot be accurately measured as pain itself is a subjective symptom. The specialized structures of the body responsible for reception and transmission of pain, heat, cold and touch have been isolated, studied and classified. Without exception, stimulation of certain receptors will produce pain, but the reaction to such stimulation cannot be foretold as it is dependent upon the meaning of that pain as interpreted in the light of past experience. It might be said that ordinarily the mind cannot create nor destroy physical pain, but that it may minimize or exaggerate it.

The anesthetist with scientific knowledge and technical ability may satisfy the duties ascribed to her by the patient as situations requiring the use of words rather than drugs to relieve pain are relatively rare in the operating room. It does seem, however, that patients receiving local or spinal anesthesia have fewer complaints of pain when the element of surprise is removed from the procedure. For example, an explanation clearly differentiating between pain and pressure can be made. As the time approaches for a little tugging on the peritoneum, a warning should be given and the idea of pressure firmly implanted. It is surprising how many times the need for supplementary anesthesia may be avoided by merely choosing the right words.

By accepting the patient's inadequate concept of the obligations of anesthesia and relegating relief of pain to a purely mechanical level we defeat only ourselves. It is possible for a machine to record blood pressure, pulse and respiration. It may be possible for a machine regulated by physiological changes in the body to administer anesthesia. It will never be possible for a machine to offer the comfort of human understanding.

Just put yourself in the place of the patient for a moment. A pending visit to surgery brings friends and relatives falling over one another in their haste to relate various weird tales concerning operating rooms, anesthesias and hospitals in general. Upon arriving in the operating suite accompanied by the disquieting memory of these tales, you find yourself in a riot of activity which has no meaning to you. It is difficult at times to even understand what is being said. Some of the words sound familiar, but many of them are foreign and somehow frightening. Then, out of the confusion someone appears and seems interested in you. In a low, calm voice she introduces herself, tells you she is going to give you your anesthesia and explains how it is done and what is expected of you. Wouldn't you be grateful to the anesthetist who had learned that anesthesia is far more than knowing which knobs to turn on the gas machine?

In doing each case the anesthetist must combine scientific knowledge, technical ability and the art of human understanding. When properly blended and well seasoned with humility, these in-

(Continued on page 125)

Anoxia

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Springfield, Illinois

Anoxia can be defined as a condition in which cells of the body (a) do not have or (b) cannot utilize sufficient oxygen to perform normal function.

Oxygen is available on the earth's surface in such quantities that higher forms of living organisms have never developed a cellular physiologic process to deal with oxygen lack. In other words it was anticipated that higher forms of life would always have an adequate supply of oxygen.

Brain tissue needs an excessive blood supply because of its high metabolic rate. It thus requires an abundance of oxygen and is the tissue most susceptible to lack of oxygen. Oxygen in the brain only "burns" carbohydrates. Glucose derived from the blood is the principle carbohydrate used by the brain. **Neither glucose nor oxygen are stored in brain tissue.** Thus both the "fuel"—glucose—and the oxygen with which to "burn" it are directly derived from blood flowing through the brain.

To insure adequate supplies of glucose and oxygen for the brain of man approximately one-fourth of all the blood pumped through the heart each minute passes through the brain. Only two per cent of body weight is composed of brain tissue. Therefore, twelve and one-half times as much blood flows through a given amount of brain tissue per minute as through the same amount of all other bodily tissue combined. Other organs receive more than their share of blood per gram per minute but none are so richly supplied as the brain. The brain receives twice as much blood per gram per minute as the pancreas, its nearest competitor.

The **cerebral cortex.** The outer one-eighth of an inch of the cerebral hemispheres cannot withstand complete oxygen deprivation for more than five minutes without undergoing irreversible destructive changes. This cortical layer contains many nerve cell bodies. It is through extremely complicated and poorly understood interaction of these nerve cells and their processes that ideas can be expressed and understood. Hence, any irreversible destructive changes of the cerebral cortex adversely affect the patient's intellectual ability. The more prolonged the oxygen lack, the greater the cortex will be damaged and the more seriously the patient's intellectual ability will be affected.

The group of cells in the central nervous system next most

Read before the Carolinas-Virginias Assembly, Roanoke, Va., April 1952.

*Former Chief of Neurology, Veterans Administration Hospital, Roanoke, Va., now in private practice.

susceptible to oxygen lack is called the **striate body.** The striate body is buried deeply in the brain substance and its cells are almost as susceptible to oxygen lack as the cortical cells. This group of cells and their processes exert control over movements by preventing the appearance of involuntary tremors and involuntary movements, and by regulating muscle tone. Thus, prolonged cerebral anoxia is also likely to result in poorly controlled movements, involuntary tremors and involuntary movements.

The immediate effects of anoxia on brain function are more pronounced than those noted later. The immediate effects are due to (a) damage to cells that can recover and (b) damage to cells so severely affected that they will disintegrate. In other words, the immediate effects are due to the inability of cells to function in which the damage has been (a) reversible and (b) irreversible. Hence, symptoms will tend to abate as those cells regain their function in which damage has been reversible. Further, there is a tendency in the cerebral cortex for cells not damaged to assume the functions of irreversibly damaged cells. The cells in the **brain stem** are less susceptible to oxygen lack than the cells in the **striate body** and the **cerebral cortex.** The brain stem is that portion of the central nervous system connecting the spinal cord to these higher centers. Besides connecting systems with higher centers there are relatively independent neural systems in the **brain stem** which are essential for maintaining circulation and respiration. Therefore, anoxia can be severe enough to inflict irreparable damage to the **cerebral cortex** and **striate body** without seriously disturbing the vital functions of circulation and respiration.

ANOXIC ENCEPHALOPATHY

Clinical considerations. There are many quite diverse causes of anoxic encephalopathy all of which result in deficient oxygen consumption of nerve cells of the central nervous system. A. The blood flow through the brain, or a portion of it, may be reduced to a critical level due to ligation, or thrombosis, of a major vessel, circulatory failure or trauma. B. The blood may carry a deficient amount of oxygen as in high altitude flying, respiratory paralysis, or carbon monoxide poisoning. C. The cells of the central nervous system may be unable to utilize adequate supplies of oxygen in the blood due to the toxic effects on the cells of such substances as general anesthetics.

Regardless of cause the symptoms of anoxic encephalopathy are strikingly similar: **A. Disturbances of consciousness.** In all severe types of oxygen deprivation unconsciousness is profound. The longer the period of unconsciousness persists the more severe the damage. In fatal cases consciousness may never be regained. **B. Psychic changes.** On emerging from stupor patients appear confused or they are unable to speak or comprehend. As speech returns it is at first slurred and what the patient says may reveal considerable confusion. He may not know where he is; his memory may be so defective that learned movements are forgotten; his behavior may be very childish associated with incessant chattering or singing. In extreme cases the speech may be incomprehensible because of damage to "speech centers." Emotional lability, laughing and crying, are characteristic. **C. Visual and sensory defects.** In extreme cases total blindness may result, or there may be various defects in the field of vision indicating damage to the retina as well as the cerebral cortex. Other sensory defects are mostly subjective, the patient complains of numbness here and there, but within these areas can distinguish sharp from dull, hot from cold as well as light touch. **D. Motor symptoms.** The most important immediate sequela of anoxemia is a series of convulsive seizures. During such seizures, regardless of how they are produced, there is deficient blood flow through the cortex. Thus, if one seizure follows another in rapid succession further damage from anoxia develops. One or more extremity may be paralyzed; a great variety of involuntary movements may be present due to damage of the **striate body;** and there may be marked incoordination in movement due to involvement of the cerebellum.

During anesthesia, when loss of consciousness is the desired state, respiratory and cardiac failure may first call attention to anoxic encephalopathy. Under such circumstances cardiac function must immediately be restored or the patient will surely die, for such a condition indicates that not only the **cerebral cortex** and **striate body** have been affected, but that the neurological system in the **brain stem** for controlling respiration and circulation has also been involved.

Non-Rebreathing Technics

Mary B. Campbell, R.N.*
Durham

With the rapid strides in the progress of anesthesiology one becomes more and more aware that a near normal maintenance of the patient's basic physiologic function is imperative. Agents should be selected and technics employed for each individual patient so as to sustain normal liver function, preserve normal kidney and adrenal gland activity and protect the normal respiratory and cardiac status. The technic should be one which will supply adequate oxygenation and at the same time provide for proper elimination of carbon dioxide from the system.[1]

It is a known fact that during lengthy procedures for adults, and even shorter procedures for children, there is a definite accumulation of carbon dioxide in the blood[2] unless proper measures are taken to prevent this.

Each of us realizes that children are less tolerant of the disturbing factors of anesthesia than are adults.[3] The occurrence of anoxia, accumulation of carbon dioxide or unnecessarily deep narcosis for long surgical procedures prove to be very detrimental in the young patient.[4]

Until recent years open drop ether was considered the safest anesthetic procedure available. However, we have learned that even this simple technic may present certain hazards. Carbon dioxide will accumulate unless the mask is frequently lifted from the face.[3] When ether in high concentrations is administered over a long period of time it produces acidosis and dehydration, impairs liver and kidney functions and elevates blood sugar and blood cholesteral levels.[2]

It might be said that no single anesthetic agent is capable of producing satisfactory levels of narcosis without disturbing the patient's normal physiology to some degree. With these thoughts in mind there has developed a trend toward balanced anesthesia, whereby several drugs may be employed to provide anesthesia at proper levels to meet the surgeon's requirements,[4] and at the same time do very little damage to the patient's physical status.

Irrespective of agents used, the technic employed plays a very important part. The nonrebreathing technic has been used by members of our department for the past three years, for numerous and various types of procedures. This method has proved

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From the Division of Anesthesia, Duke University Hospital, Durham, North Carolina.

*Read before the Carolinas-Virginias Assembly of Nurse Anesthetists aboard S. S. Queen of Bermuda, May 3, 1953.

to be beneficial and advantageous for patients, surgeons and anesthetists alike.

The nonrebreathing valve (Figure 1), perfected by Drs. C. R. Stephen and H. M. Slater, is simple in design and mechanism. In a light metal framework about 3 1/2 inches in length, two rubber discs are placed in such a way that during inhalation the patient breathes only gases from the machine while exhalations are blown off into the atmosphere[3] thereby ridding the system of carbon dioxide.

The discs are constructed and attached in a manner so that little respiratory fatigue occurs, even for the youngest child, during operations requiring several hours.[5]

Dead space is minimal, for the exhalation valve is very close to an endotracheal tube, which is necessary for use of the valve. The inlet valve in in close proximity to a reservoir bag which should be 2.5 to 3 liters capacity for children and 5 liters for adults. The other end of the bag is attached, by a length of rubber tubing, to the source of anesthetic gases.[5]

Since there is no rebreathing with this method, the flow of gases must be approximately that of the patient's minute volume. The reservoir bag should remain moderately full but not distended.[3]

Assisted or controlled respirations may be accomplished with ease by placing a thumb over the exhalation valve and applying pressure to the breathing bag, during the inspiratory phase. For exhalation the thumb is removed, and hand relaxed allowing the bag to refill with anesthetic gases.[3]

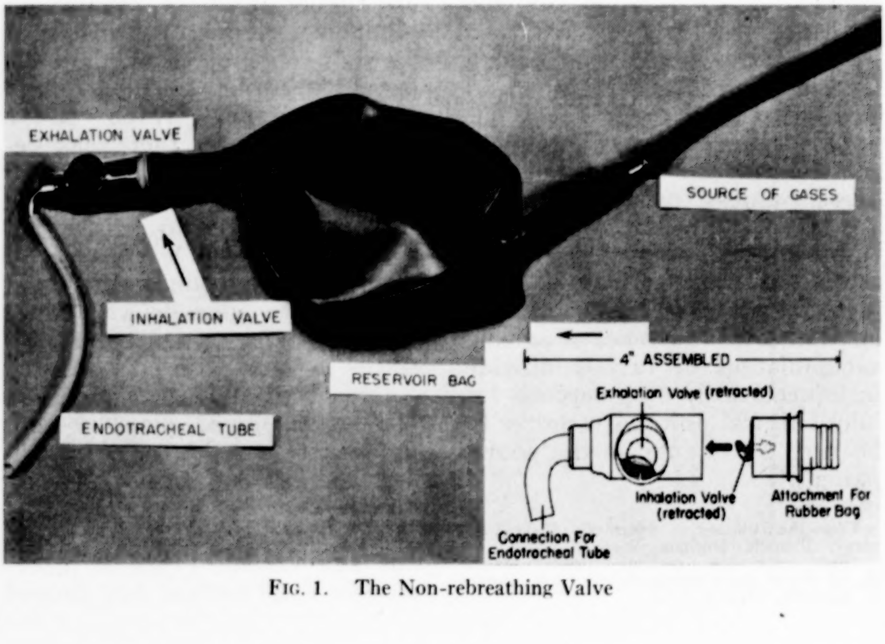

EXHALATION VALVE
SOURCE OF GASES
INHALATION VALVE
RESERVOIR BAG
ENDOTRACHEAL TUBE
4" ASSEMBLED
Exhalation Valve (retracted)
Inhalation Valve (retracted)
Attachment For Rubber Bag
Connection For Endotracheal Tube

FIG. 1. The Non-rebreathing Valve

The valve is economical, for the rubber discs will last from fifteen months to two years if proper care is taken. They should never be soaked, boiled or autoclaved but may be cleansed well with a sponge dampened with ether. Rubber seatings and valves may be replaced at minimal cost.[3]

During operations involving the face, neck or head the use of the valve is advantageous for it allows the anesthetist to remain a considerable distance from the operative field and still maintain complete control of the anesthesia.

For infants and children this technic is employed almost exclusively in plastic surgery and neurosurgery; also for many abdominal operations and thoracic procedures.

Drugs which have been used for children with this method include: Nitrous Oxide, Ether and Sodium Pentothal or Nitrous Oxide and Ether alone.

The valve has more than proved its value for adults undergoing operations in neurosurgery, i.e., craniotomies, thoracic or cervical laminectomies; in plastic procedures involving the face, neck or head, as well as for eye surgery.

Several combinations of anesthetic drugs have been utilized for adults with relative facility. These combinations include: Nitrous Oxide and Ether; Nitrous Oxide, Sodium Pentothal with various relaxant drugs; Sodium Pentothal, Nitrous Oxide and Trichlorethylene; or Nitrous Oxide and Sodium Pentothal.

After reviewing the literature concerning the nonrebreathing technics and using the valve clinically it appears that the advantages far outweigh the disadvantages. There are a few disadvantages and the discussion of these should include the fact that the patient is constantly losing heat and water vapor into the atmosphere. This may be taken care of by administration of intravenous fluids and by the maintenance of adequate temperatures in the operating room.[3]

More gases are used than in a closed system. Children require five to seven liters per minute and adults seven to ten liters.[3]

These facts, however, seem relatively unimportant when one considers the consequent well-being of the patient.

NONREBREATHING MASK

For many minor operative procedures in children, it is thought that an endotracheal tube seems impractical and unnecessary. With this in mind, a nonrebreathing mask was designed and constructed so that it would have all the advantages of the technic without the added hazards of intubation (Figure 2). It is a small Bennett or Foregger mask with an inhalation valve in the inlet of the mask and the exhalation valve is built into the plastic face piece.

The mask may be used for children from six months to nine years of age. It should be fitted snugly to the face so that the anesthetic mixture will not become diluted with air. A 2.5 liter bag is used.

It is suggested that the bag be compressed and emptied of all contents about every five minutes to eliminate the possibility of an accumulation of carbon dioxide under the mask.

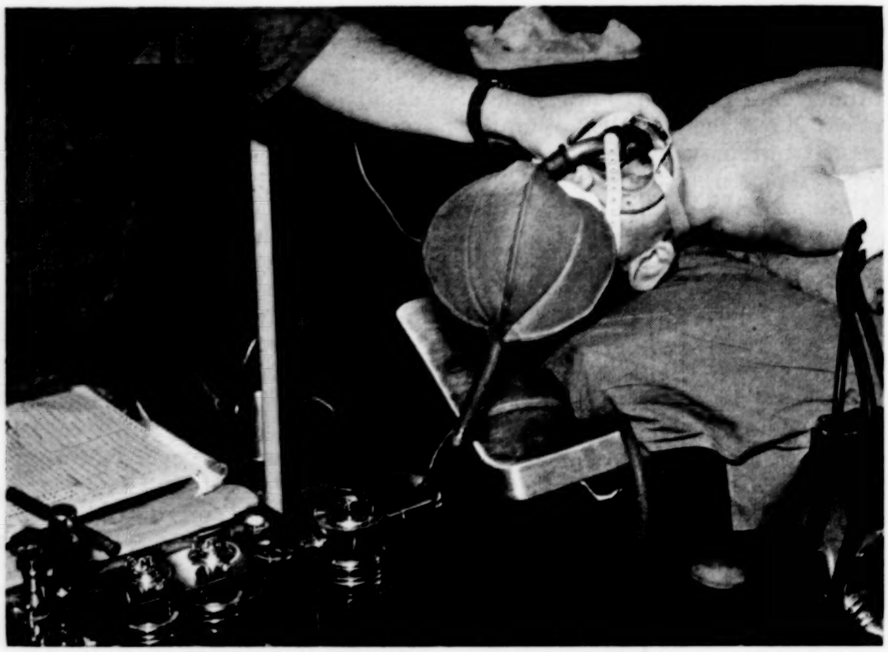


FIG. 2. The Non-rebreathing Mask

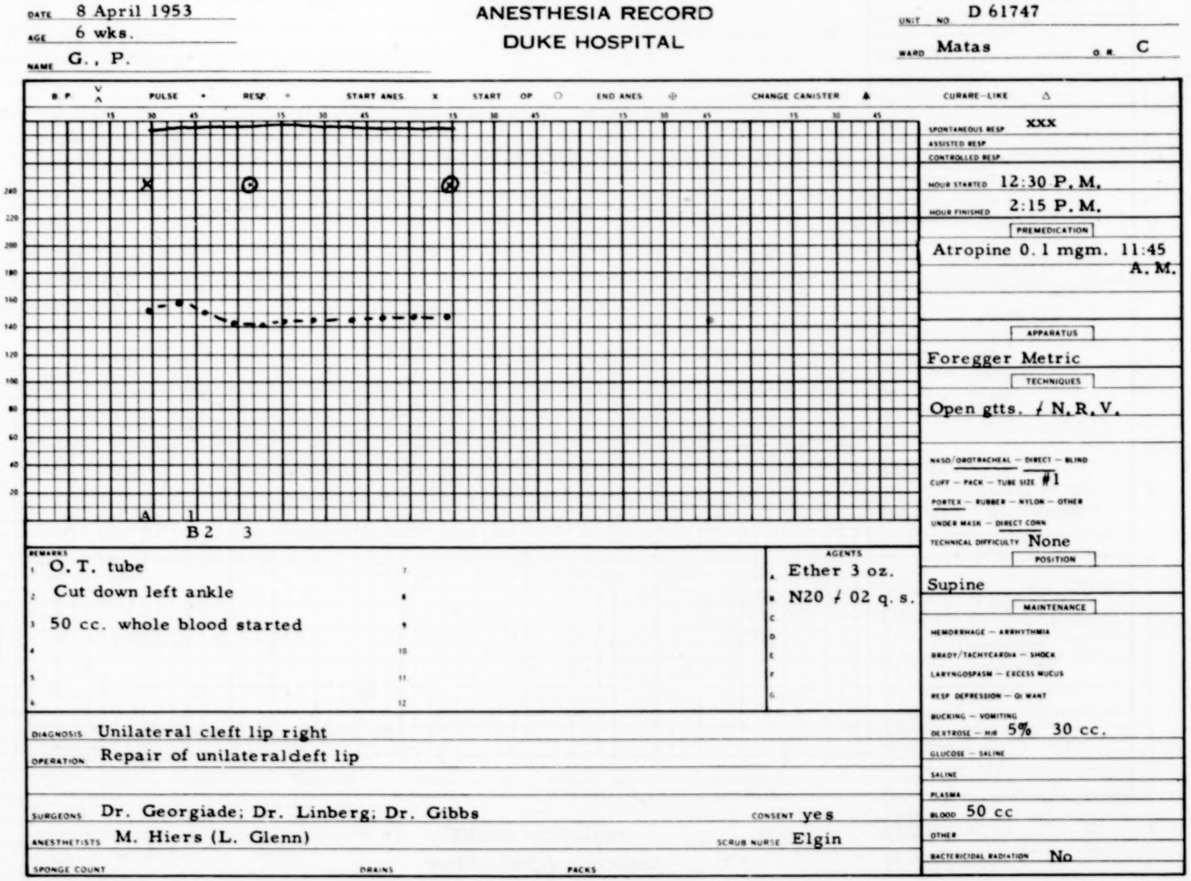
Anesthesia should be induced by open drop method, as it is very difficult to build up a sufficient concentration of ether under the facepiece for the induction phase. After the patient has become saturated the mask may be used to administer a combination of nitrous oxide, oxygen and ether,[6] or Sodium Pentothal, nitrous oxide, oxygen and ether.

CASE RECORDS

Figure 3 shows the anesthetic record of a six-weeks old infant during a repair of unilateral cleft lip. Induction was by means of open drop ether. A No. 1 portex (vinyl plastic) endotracheal tube was employed and anesthesia was maintained with nitrous oxide, oxygen in a 70:30 ratio with ether added. The baby was awake when taken to the recovery room.

Figure 4 is the record of a ten year old boy during a laminectomy T4, T5, with exploration of gunshot wound of spinal cord. Induction was with Vinethene and ether. A No. 5 portex endotracheal tube was inserted and anesthesia was maintained with nitrous oxide, oxygen and ether. His condition remained good throughout the procedure and recovery was uneventful.

Figure 5 is the anesthetic record of a nine year old boy during a debridement of hand injury, left. For induction of anesthesia intravenous Sodium Pentothal 150 mg. was used. Maintenance of anesthesia included nitrous oxide, oxygen in a 70:30 ratio with small amounts of Sodium Pentothal and ether added. The nonrebreathing mask was used for this procedure. Recovery was



ANESTHESIA RECORD
DUKE HOSPITAL

DATE 8 April 1953
AGE 6 wks.
NAME G., P.
UNIT NO. D 61747
WARD Matas O.R. C

B.P. ∨ ∧
PULSE •
RESP. ○
START ANES X
START OP ⊙
END ANES ⊕
CHANGE CANISTER ▲
CURARE-LIKE △
15 30 45 15 30 45 15 30 45 15 30 45 15 30 45
240
220
200
180
160
140
120
100
80
60
40
20
A 1
B 2 3

SPONTANEOUS RESP XXX
ASSISTED RESP
CONTROLLED RESP
HOUR STARTED 12:30 P.M.
HOUR FINISHED 2:15 P.M.

PREMEDICATION
Atropine 0.1 mgm. 11:45 A.M.

APPARATUS
Foregger Metric

TECHNIQUES
Open gtts. ⨍ N.R.V.

NASO/OROTRACHEAL — DIRECT — BLIND
CUFF — PACK — TUBE SIZE #1
PORTEX — RUBBER — NYLON — OTHER
UNDER MASK — DIRECT CONN
TECHNICAL DIFFICULTY None

POSITION
Supine

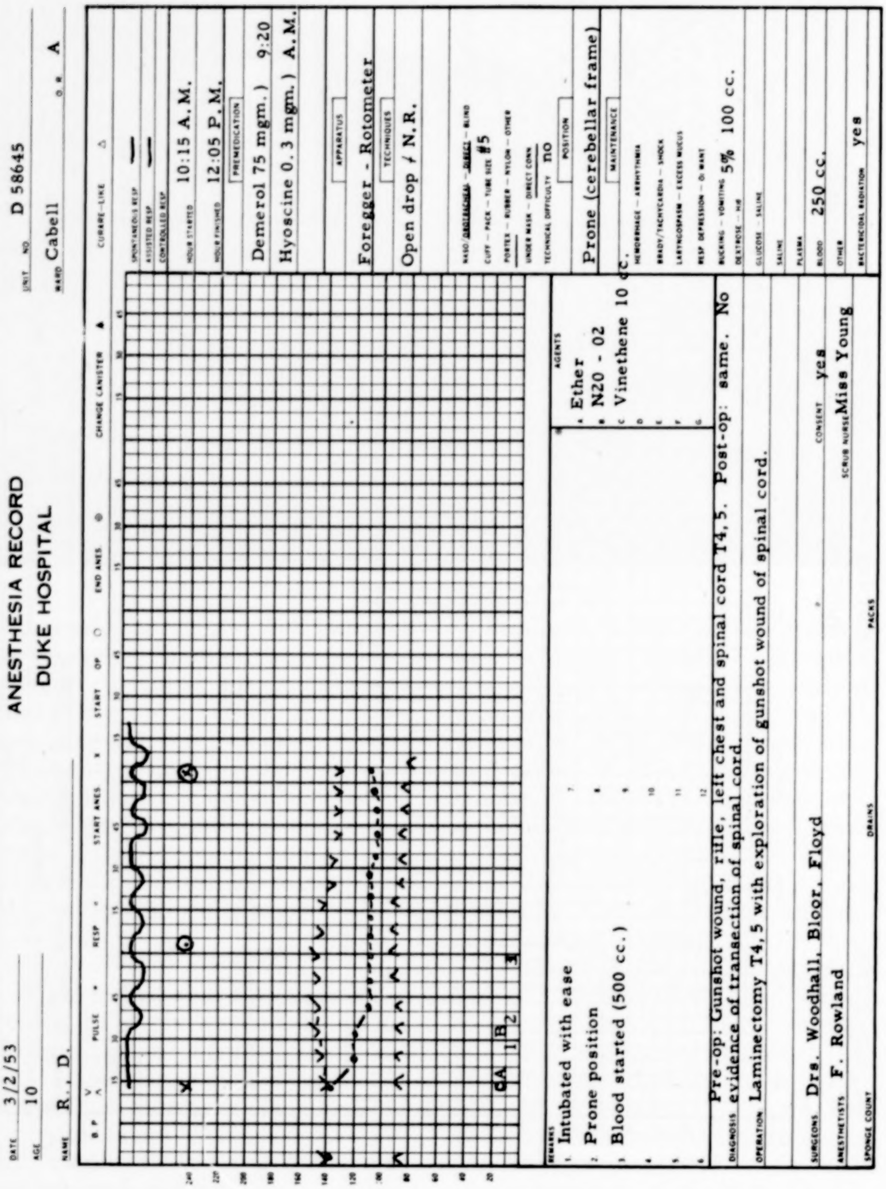
MAINTENANCE
HEMORRHAGE — ARRHYTHMIA
BRADY/TACHYCARDIA — SHOCK
LARYNGOSPASM — EXCESS MUCUS
RESP DEPRESSION — O2 WANT
BUCKING — VOMITING
DEXTROSE — H2O 5% 30 cc.
GLUCOSE — SALINE
SALINE
PLASMA
BLOOD 50 cc
OTHER
BACTERICIDAL RADIATION No

REMARKS
1. O.T. tube
2. Cut down left ankle
3. 50 cc. whole blood started
4.
5.
6.
7.
8.
9.
10.
11.
12.

AGENTS
A. Ether 3 oz.
B. N20 ⨍ 02 q.s.
C.
D.
E.
F.
G.

DIAGNOSIS Unilateral cleft lip right
OPERATION Repair of unilateraldeft lip
SURGEONS Dr. Georgiade; Dr. Linberg; Dr. Gibbs
CONSENT yes
ANESTHETISTS M. Hiers (L. Glenn)
SCRUB NURSE Elgin
SPONGE COUNT
DRAINS
PACKS

FIG. 3. Anesthetic record of infant undergoing operation for unilateral cleft lip. (duration 1 hr. 45 mins.)



ANESTHESIA RECORD
DUKE HOSPITAL

DATE 3/2/53
AGE 10
NAME R., D.
UNIT NO. D 58645
WARD Cabell
O.R. A

Hour started 10:15 A.M.
Hour finished 12:05 P.M.

PREMEDICATION
Demerol 75 mgm.) 9:20
Hyoscine 0.3 mgm.) A.M.

APPARATUS
Foregger - Rotometer

TECHNIQUES
Open drop / N.R.
Cuff — pack — tube size #5
Technical difficulty no

POSITION
Prone (cerebellar frame)

MAINTENANCE
Dextrose 5% 100 cc.
Blood 250 cc.
Bactericidal radiation yes

AGENTS
A. Ether
B. N20 - 02
C. Vinethene 10 cc.

REMARKS
1. Intubated with ease
2. Prone position
3. Blood started (500 cc.)

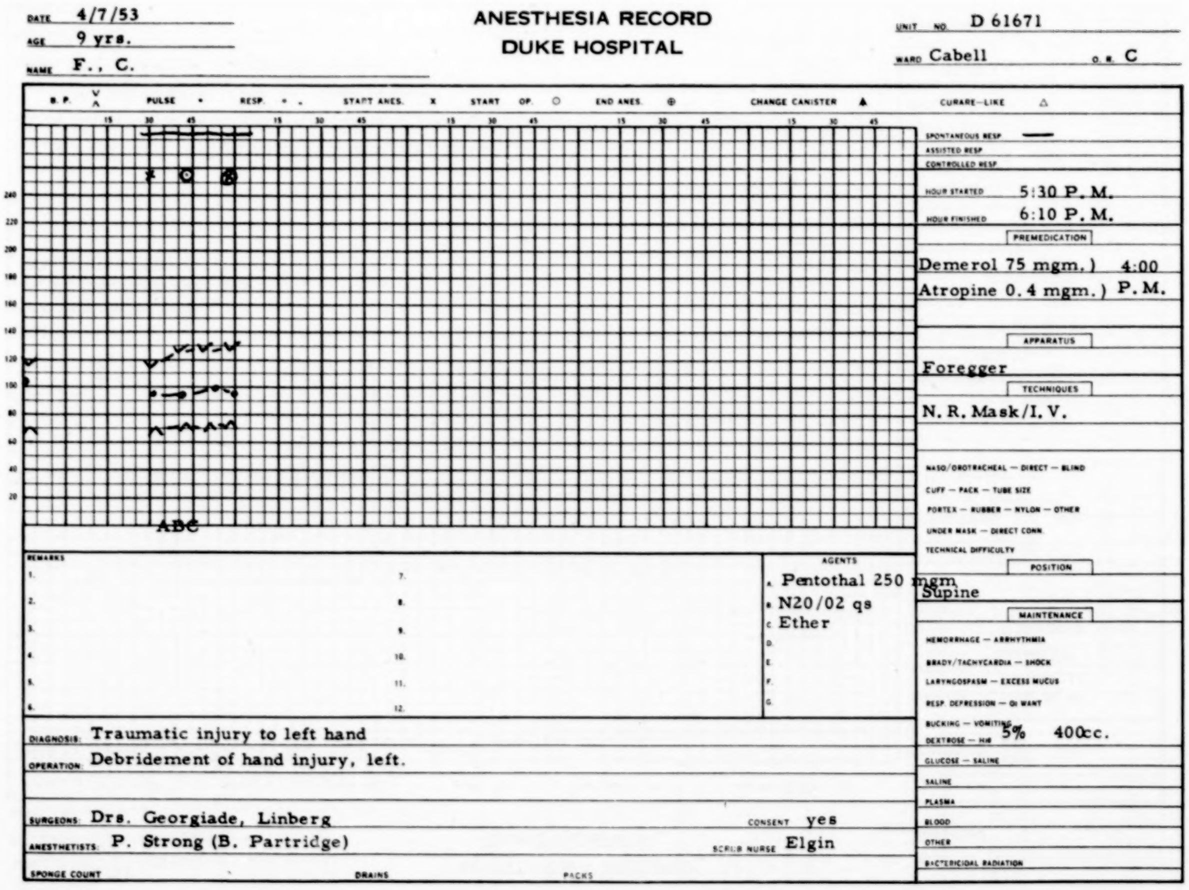
DIAGNOSIS Pre-op: Gunshot wound, rifle, left chest and spinal cord T4,5. Post-op: same. No evidence of transection of spinal cord.

OPERATION Laminectomy T4,5 with exploration of gunshot wound of spinal cord.

SURGEONS Drs. Woodhall, Bloor, Floyd
CONSENT yes
ANESTHETISTS F. Rowland
SCRUB NURSE Miss Young

B.P.
PULSE
RESP
START ANES.
START OP.
END ANES.
CHANGE CANISTER
CURARE-LIKE
15
30
45
240
220
200
180
160
140
120
100
80
60
40
20
CA
1
B
2
3
SPONGE COUNT
DRAINS
PACKS

FIG. 4. Anesthetic record of child undergoing laminectomy. (duration 1 hr. and 50 minutes)


B. P. V Λ
PULSE •
RESP. ∘
START ANES. X
START OP. ○
END ANES. ⊕
CHANGE CANISTER ▲
CURARE—LIKE △
15
30
45
240
220
200
180
160
140
120
100
80
60
40
20
ABC

ANESTHESIA RECORD
DUKE HOSPITAL

DATE 4/7/53
AGE 9 yrs.
NAME F., C.
UNIT NO. D 61671
WARD Cabell O. R. C

SPONTANEOUS RESP. —
ASSISTED RESP.
CONTROLLED RESP.
HOUR STARTED 5:30 P. M.
HOUR FINISHED 6:10 P. M.

PREMEDICATION
Demerol 75 mgm.) 4:00
Atropine 0.4 mgm.) P. M.

APPARATUS
Foregger

TECHNIQUES
N. R. Mask/I. V.

NASO/OROTRACHEAL — DIRECT — BLIND
CUFF — PACK — TUBE SIZE
PORTEX — RUBBER — NYLON — OTHER
UNDER MASK — DIRECT CONN.
TECHNICAL DIFFICULTY

POSITION
Supine

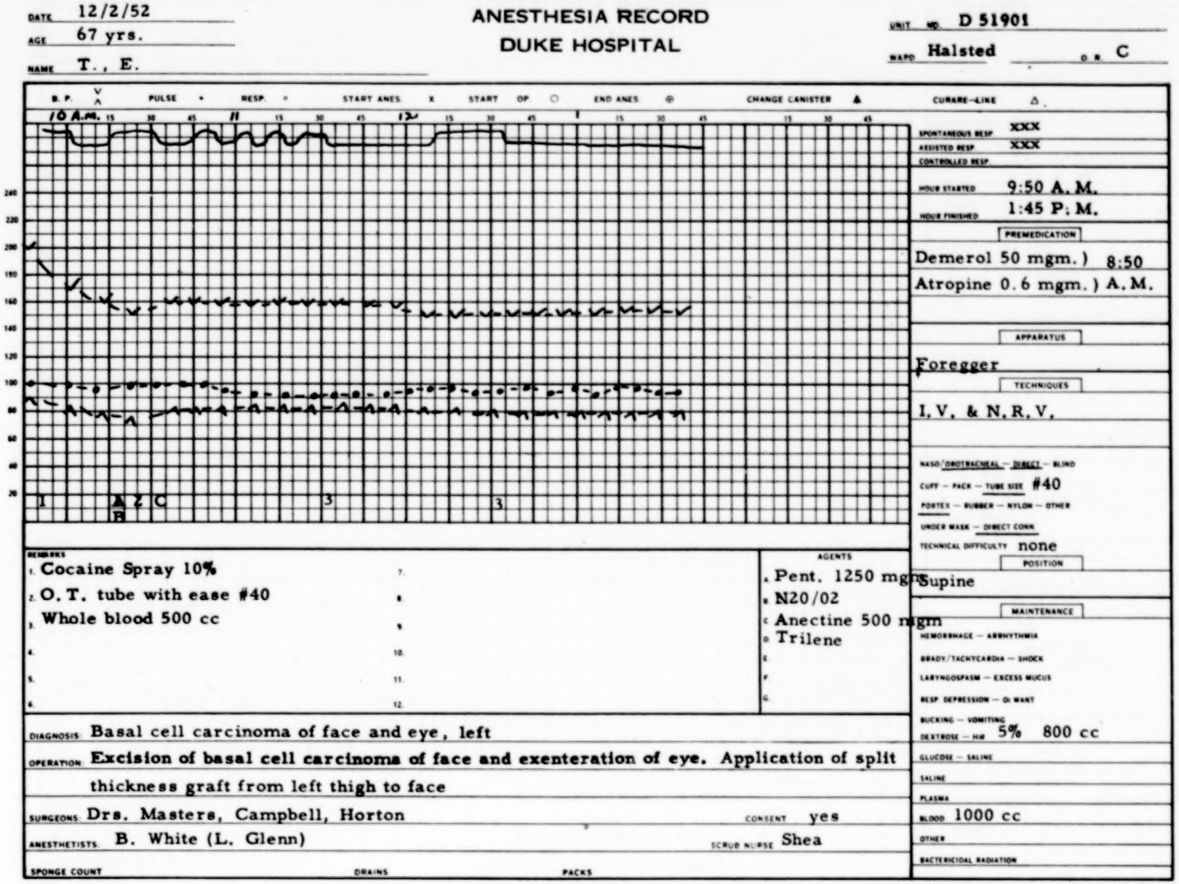
MAINTENANCE
HEMORRHAGE — ARRHYTHMIA
BRADY/TACHYCARDIA — SHOCK
LARYNGOSPASM — EXCESS MUCUS
RESP. DEPRESSION — O_2 WANT
BUCKING — VOMITING
DEXTROSE — H_2O 5% 400cc.
GLUCOSE — SALINE
SALINE
PLASMA
BLOOD
OTHER
BACTERICIDAL RADIATION

REMARKS
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.

AGENTS
A. Pentothal 250 mgm
B. N20/02 qs
C. Ether
D.
E.
F.
G.

DIAGNOSIS: Traumatic injury to left hand
OPERATION: Debridement of hand injury, left.
SURGEONS: Drs. Georgiade, Linberg CONSENT yes
ANESTHETISTS: P. Strong (B. Partridge) SCRUB NURSE Elgin
SPONGE COUNT DRAINS PACKS

FIG. 5. Anesthetic record of boy for debridement of hand injury. (duration 40 minutes)



DATE 12/2/52
AGE 67 yrs.
NAME T., E.

ANESTHESIA RECORD
DUKE HOSPITAL

UNIT NO. D 51901
WARD Halsted O.R. C

B.P. ∨ ∧ PULSE • RESP. ○ START ANES. X START OP. ○ END ANES. ⊕ CHANGE CANISTER ▲ CURARE-LIKE △

10 A.M.
15
30
45
11
15
30
45
12
15
30
45
1
15
30
45
15
30
45
240
220
200
180
160
140
120
100
80
60
40
20
I
A
B
2
C
3
3

SPONTANEOUS RESP. XXX
ASSISTED RESP. XXX
CONTROLLED RESP.

HOUR STARTED 9:50 A.M.
HOUR FINISHED 1:45 P.M.

PREMEDICATION
Demerol 50 mgm.) 8:50
Atropine 0.6 mgm.) A.M.

APPARATUS
Foregger

TECHNIQUES
I.V. & N.R.V.

NASO/OROTRACHEAL — DIRECT — BLIND
CUFF — PACK — TUBE SIZE #40
PORTEX — RUBBER — NYLON — OTHER
UNDER MASK — DIRECT CONN.
TECHNICAL DIFFICULTY none

POSITION
Supine

MAINTENANCE
HEMORRHAGE — ARRHYTHMIA
BRADY/TACHYCARDIA — SHOCK
LARYNGOSPASM — EXCESS MUCUS
RESP. DEPRESSION — O2 WANT
BUCKING — VOMITING
DEXTROSE — H2O 5% 800 cc
GLUCOSE — SALINE
SALINE
PLASMA
BLOOD 1000 cc
OTHER
BACTERICIDAL RADIATION

REMARKS
1. Cocaine Spray 10%
2. O. T. tube with ease #40
3. Whole blood 500 cc
4.
5.
6.
7.
8.
9.
10.
11.
12.

AGENTS
A. Pent. 1250 mgm
B. N20/02
C. Anectine 500 mgm
D. Trilene
E.
F.
G.

DIAGNOSIS Basal cell carcinoma of face and eye, left
OPERATION **Excision of basal cell carcinoma of face and exenteration of eye.** Application of split thickness graft from left thigh to face
SURGEONS Drs. Masters, Campbell, Horton CONSENT yes
ANESTHETISTS B. White (L. Glenn) SCRUB NURSE Shea
SPONGE COUNT DRAINS PACKS

FIG. 6. Anesthesia record of man undergoing excision of carcinoma of face. (duration 3 hrs. and 55 mins.)

uneventful.

Figure 6 shows the anesthetic record of a sixty-seven year old white male during an excision of basal cell carcinoma of the face and exenteration of left eye with graft.

The physical examination of the patient revealed a blood pressure of 190 mm. of mercury systolic and 110 mm. of mercury diastolic. He had senile emphysema and an enlarged heart.

After the nose and pharynx were anesthetized topically with a 10% solution of cocaine the induction of anesthesia was with Sodium Pentothal and a Succinylcholine Chloride drip. A No. 40 orotracheal tube was inserted with ease and connected to the anesthetic gases with a nonrebreathing valve.

Maintenance of anesthesia included the use of Sodium Pentothal, nitrous oxide, Succinylcholine Chloride and Trichorethylene. Respirations were assisted during the greater part of maintenance. It will be noted that the blood pressure and pulse remained within normal limits throughout this procedure.

The postoperative period was without sequelae.

Summary

A description of the nonrebreathing valve and mask has been given.

The advantages and disadvantages of the nonrebreathing technic have been discussed.

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5. Stephen, C. R. and Slater, H. M.: Agents and technics employed in pediatric anesthesia. Anesth. & Analg., **29**: 254-262, Sept.-Oct., 1950.

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Legislation

AGED PATIENT'S BEDFALL DUE TO OWN NEGLIGENCE IN LETTING DOWN SIDERAIL.[1]—While confined as a bed patient in a home for the aged, she fell from the bed in some manner sustaining a fractured hip. Rails eighteen inches high had been secured around the bed to prevent the patient from rolling out. On the night of the injury, a nurse had gone to check the charts of the patients and on return had found the patient on the floor with one of the rails down.

The court dismissed the complaint on the ground that the patient had the obligation to produce evidence of negligence on the part of the defendant and failed to do so. The evidence in the present case was available to the injured person; it appeared that the proximate cause of the injury was the action of the patient. There was no proof that the patient was mentally incompetent.

[1] Ericson v. Peterson, 2 **CCH Neg. Cases** 2d, 638—Calif.

MENTAL PATIENT'S SUICIDAL TENDENCIES SHOULD HAVE FOREWARNED PRIVATE HOSPITAL.[1]—The patient who entered a private sanitarium for the care and treatment of the mentally ill committed suicide on the fourth day by hanging or strangling herself with strips of cloth torn from her nightgowns and fastened to a water pipe in the bathroom.

At the time of admission, the patient's tentative diagnosis was either manic-depressive or schizophrenic with paranoid ideas. The hospital therefore was forewarned that the patient might harm herself. On the day of the suicide, the patient had been given a muscle-relaxing drug, curare, and an electric-shock treatment and placed in a safety belt on her couch, asleep, with an attendant sitting at her side. Left alone for some hours, she was found with her feet sticking out from under the bathroom door into the bedroom.

The court stated that the sanitarium owed the patient the specific duty of exercising reasonable care to safeguard and protect her from injuring herself. Their duty in this regard was proportionate to her needs; that is, such reasonable care and attention as her known mental condition required. The judgment against the sanitarium for $9,000. was affirmed.

[1] Stillman v. Robinson, 2 **CCH Neg. Cases** 732; Sept. 14, 1953, Mo.

HUSBAND'S CONSENT TO OPERATION NOT NECESSARY EVEN IF MISCARRIAGE MAY RESULT.[1]—A recent case holds that the consent of a husband to medical treatment of the wife is not necessary, but that the consent of the wife alone is sufficient, even though the medical care and treatment regarding the pregnancy of the wife is one which might result in a miscarriage.

[1] Rosenberg v. Feigin, 260 P. 2d 143—Cal. App.

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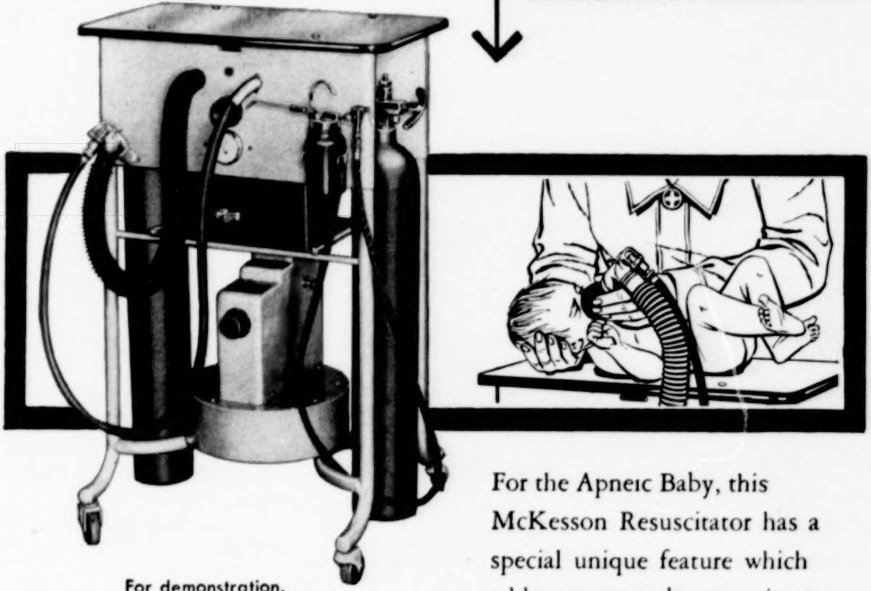

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NURSE ATTENDING CLASSES IN INSTRUCTION IS REGARDED AS BENEFICIARY OF HOSPITAL'S PHILANTHROPY.[1]—A registered nurse, enrolled as a member of a course in nursing instruction given by a college also attended classes at a Nurse's Home of a hospital. These classes were conducted under a verbal agreement whereby the college was permitted to use the rooms for giving its courses in nursing instruction for the period of one year. In return, the college paid the hospital $75.00 which was regarded by the parties as a donation.

The nurse fell in an areaway from which a railing had been removed and which was improperly lighted. In suing the hospital she argued that she was not the recipient of the charitable benefits of the hospital, and therefore it was not immune from suit.

However, the court dismissed her case, holding that under New Jersey law, providing quarters for the advancement of the training of nurses falls within the secondary orbit of a hospital's function and any person who avails himself of this purpose is a recipient of the benefactions of the hospital. A hospital's purpose is not limited in its benefits to patients only.

[1] Casper v. Cooper Hospital, 2 **C.C.H. Neg. Cases** 2d 482, New Jersey Superior Court, July 13, 1953.

ILLINOIS RULES THAT UNBORN CHILD NOW HAS CAUSE OF ACTION FOR INJURIES INCURRED BEFORE BIRTH.[1] — Illinois recently held that a minor may recover for injuries caused to it while **en ventre sa mere,** thus overruling previous decisions.

[1] Rodriquez v. Patti, 2 **CCH Neg. Cases** 2d 795; Sept. 24, 1953—Ill.

COMPLETE IMMUNITY OF CHARITABLE HOSPITALS IS UPHELD BY NORTH CAROLINA COURTS.[1]—The courts of North Carolina have answered the question as to the liability of charitable hospitals in that state to "paying" patients by holding that immunity exists as to both paying and nonpaying patients.

This ruling resulted from a case involving injuries to a minor alleged to have been injured while under a "croup tent". The child was a paying patient whose father paid an amount "more than adequate and sufficient to defray the costs and expenses of all care and services rendered by the defendant to the plaintiff in treating her for pneumonia".

After a review of the legal authorities in the various jurisdictions, the court decided to adhere to the principle that public policy requires charitable institutions to be immune from claims for personal injuries, whether by beneficiaries or paying patients.

[1] Williams v. Randolph Hospital, Inc., 2 **CCH Neg Cases** 2d, 575—North Carolina Supreme Court, March 25, 1953.

UNAUTHORIZED OPERATION ADJUDGED ASSAULT BARRED BY STATUTE OF LIMITATIONS.[1]—The patient sued two physicians for an alleged "unlawful battery" and "act of malpractice". He claimed that he employed the physicians to perform a circumcision on him, but instead, and without his consent, a vasectomy was performed.

The doctors admitted that they performed a vasectomy, but denied it was without the patient's consent; furthermore that the alleged battery occurred more than one year prior to the filing of the complaint and was therefore barred by the one year statute of limitation. There was no negligence in the treatment or operation or allegation of a lack of skill so as to constitute malpractice. The statute of limitation for malpractice was two years.

Ruling that the case should be dismissed, the court held that the one year statute applied. "If defendants, with plaintiff's consent, had intended before the operation to perform a circumcision, and in attempting to do so had by mistake or negligence performed a vasectomy instead, this might constitute "negligence in the practice of the profession, but where, as here, the defendants intended to perform a vasectomy, and proceeded to do as intended, with no negligence or unskillfulness but without plaintiff's consent, a case of unlawful assault and battery is made out and is subject" to the one year limitation prescribed in the statute.

1. Maercklein v. Smith, 2 **C.C.H. Neg. Cases** 2d 462—Colorado Supreme Court, July 20, 1953.

FEDERAL GOVERNMENT PAYS FOR OPERATIVE INJURIES TO MEDICAL SECRETARY ADMITTED AS PATIENT[1] A civilian medical secretary employed by a War Department hospital was admitted there as a patient. Her commanding officer who employed her arranged for her to be operated upon for varicose veins in her legs.

The patient claimed that the operation was negligently performed and resulted in infection of the wound, and that such negligence resulted in a phagedenic ulcer, a rare and serious disease. Following the operation, she spent the next four years in a succession of hospitals, undergoing approximately thirty surgical operations and sixty blood transfusions.

Damages in the sum of $123,904.65 were granted to her. The court held that the commanding officer acted within the performance of his duties when he allowed her admission and that the subordinate medical officers who operated upon her acted within the scope of their employment.

1. Cannon v. United States, 111 F. Supp. 162-D.C. Cal.

STATE OF WASHINGTON WITHDRAWS IMMUNITY FOR INJURY TO PAYING PATIENTS.[1]—A paying patient in a charitable, nonprofit hospital in the State of Washington has been held entitled to recover damages for injuries negligently caused by the employees of the hospital. The court also concluded that the reason for the rule of charitable immunity based on public policy no longer exists in that state. "Our previous decisions holding to the contrary are hereby overruled."

The alleged negligence consisted of the act of a hospital nurse in injecting a foreign substance into the patient's left arm, causing pain and permanent injury. There is today no factual justification, declared the court, for immunity in a case such as this. "Principles of law, logic and intrinsic justice demand that the mantle of immunity be withdrawn". The opinion in the case reviews the decisions in the remainder of the states and demonstrates the general trend to hold charitable, nonprofit hospitals liable for injury to patients. It is pointed out that the much-feared destruction of charitable hospitals by imposing liability has not had that result.

1. Pierce v. Yakima Valley Memorial Hospital, **2 CCH Neg. Cases** 2d 603—Washington Supreme Court, Sept. 1, 1953.

COUNTY HOSPITAL IN WISCONSIN IS LIABLE TO PAYING PATIENTS WHO ARE INJURED.[1]—A general hospital operated by a county board was sued by a paying patient who was injured when a scalding hot water bottle was placed behind her back. The patient had been operated on for hemorrhoids, and for the purposes of the operation an anesthesia was administered. Immediately after the operation, she was placed in her room. One of the nurses placed a scalding hot water bottle under her, thereby severely burning her.

The jury found that the hospital failed to exercise ordinary care in regard to inspecting the hot water bottle application after placing the bottle in the bed. Although charitable hospitals in Wisconsin are immune from liability to patients, the same rule does not apply to governmental hospitals, since such institutions are operated in the proprietary rather than governmental capacity of the county in respect to paying patients.

1. Carlson v. Marinette County, **2 CCH Neg. Cases** 2d 720, July 3, 1953—Wis.

MENTAL PATIENT'S DEATH ATTRIBUTED TO FAILURE TO FOLLOW INSTRUCTIONS FOR HIS CARE.[1]—The widow sought damages for her husband's death due to a fall from a second-story window of a hospital in which he was a mental patient. His doctor had left instructions for "low bed, sideboards and restraint if necessary".

The patient was placed in a bed near the window of a second floor room, and no one was left in attendance when the wife went home. Evidence showed that the patient was irrational, confused and wandering around the floor and that the floor nurses could not handle him. Although an attendant was ordered by a staff doctor, none was obtained. While thus unattended, the patient fell or jumped out of the window in his room, and subsequently died from his injuries.

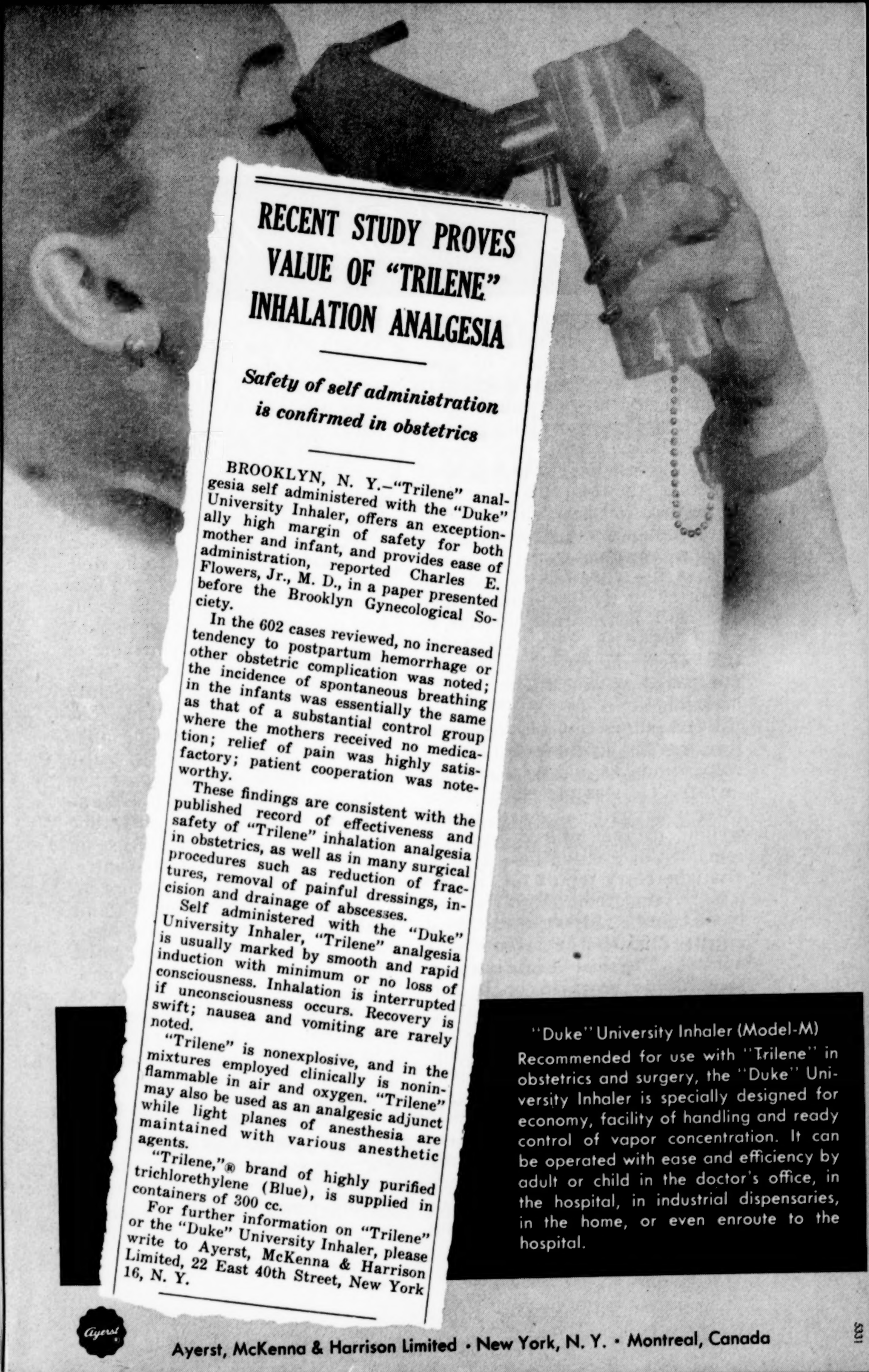
An award of $7,000. was held not excessive for the death of the 59-year-old patient. The hospital was negligent in failing to follow the orders to place the patient on the ground floor, to follow the admittance orders, and to provide an attendant in the patient's room.

1. Rural Education Assn. Inc. v. Anderson, **2 C.C.H. Neg. Cases** 2d 389,—Tennessee Court of Appeals, June 26, 1953.

Qualifying Examination

The Twentieth Qualifying Examination for membership in the American Association of Nurse Anesthetists will be conducted on Saturday, November 13, 1954.

The deadline for completed applications, including transcripts, is October 4, 1954. If application with transcript is received too close to the deadline, the application may not be processed in time for the candidate to be scheduled for this examination. The decision of the Credentials Committee will be mailed to the candidates by Mid-October.



RECENT STUDY PROVES VALUE OF "TRILENE" INHALATION ANALGESIA

Safety of self administration is confirmed in obstetrics

BROOKLYN, N. Y.—"Trilene" analgesia self administered with the "Duke" University Inhaler, offers an exceptionally high margin of safety for both mother and infant, and provides ease of administration, reported Charles E. Flowers, Jr., M. D., in a paper presented before the Brooklyn Gynecological Society.

In the 602 cases reviewed, no increased tendency to postpartum hemorrhage or other obstetric complication was noted; the incidence of spontaneous breathing in the infants was essentially the same as that of a substantial control group where the mothers received no medication; relief of pain was highly satisfactory; patient cooperation was noteworthy.

These findings are consistent with the published record of effectiveness and safety of "Trilene" inhalation analgesia in obstetrics, as well as in many surgical procedures such as reduction of fractures, removal of painful dressings, incision and drainage of abscesses.

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Recommended for use with "Trilene" in obstetrics and surgery, the "Duke" University Inhaler is specially designed for economy, facility of handling and ready control of vapor concentration. It can be operated with ease and efficiency by adult or child in the doctor's office, in the hospital, in industrial dispensaries, in the home, or even enroute to the hospital.

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Notes and Case Reports

AGE AS A FACTOR IN ANESTHESIA

Within a few days of each other two emergency cases were brought to the operating rooms of St. John's Hospital, Springfield, Illinois. Either case should be of interest but we believe that together the two patients with more than 100 years difference in ages demonstrate the range of modern anesthesia.

CASE I.—A man, aged 105, was admitted to the hospital January 28th with a fractured hip, due to a fall on the ice. This patient was the oldest on record to be administered an anesthetic in this hospital.

Upon admission his temperature was 98^{4}°F, the pulse 80 and respirations 20, and were of good quality. He was placed in Bucks extension, with a seven pound weight to the injured leg. He remained in traction for six days. His laboratory report was as follows: Hemoglobin 9 grams; red blood count 3,510,000; white blood count 8,950; the urine was normal. Physical examination showed his heart to be in fair condition and his lungs negative.

On February 3, he was prepared for an open reduction of the hip. Demerol 75 mg. with Atropine gr. 1/150 was given subcutaneously at 7:30 A.M., as preoperative medication. At approximately 7:45 A.M. he was brought to the operating room. He was very alert at this time, complaining of some pain of the fractured hip and of severe dryness of the mouth. When placed on the fracture table he was able to give some assistance. His blood pressure was 140/80; pulse 104; respirations 20. Anesthesia was begun at 8:10 A.M. The induction required 175 mg. of 2.5 per cent pentothal sodium solution. Oxygen was started, the mask was placed on the face, and after the patient began to breathe well, a 50/50 nitrous oxide oxygen flow was started. The nitrous oxide and oxygen were kept at an even flow throughout the remainder of the anesthesia. An oral airway was placed without difficulty shortly after the induction. The first blood pressure reading after the induction was 120/70; pulse 100; respirations 20. After five minutes the blood pressure dropped to 94/66. At this time 500 cc. of 5 per cent glucose in distilled water was started intravenously. The blood pressure increased to 130/88, then became stabilized for the rest of the operation at about 100/80. The pulse remained at 80 and the respirations at 18, with a very good exchange. The total dosage was pentothal sodium 2½ per cent, 550 mg. and 30 units d-tubocurare. The duration of anesthesia was 160 minutes.

Before the patient returned to his room, he was awake and talking. No postanesthetic headache, vomiting or cyanosis was present at any time. During postopera-

(Continued on page 122).

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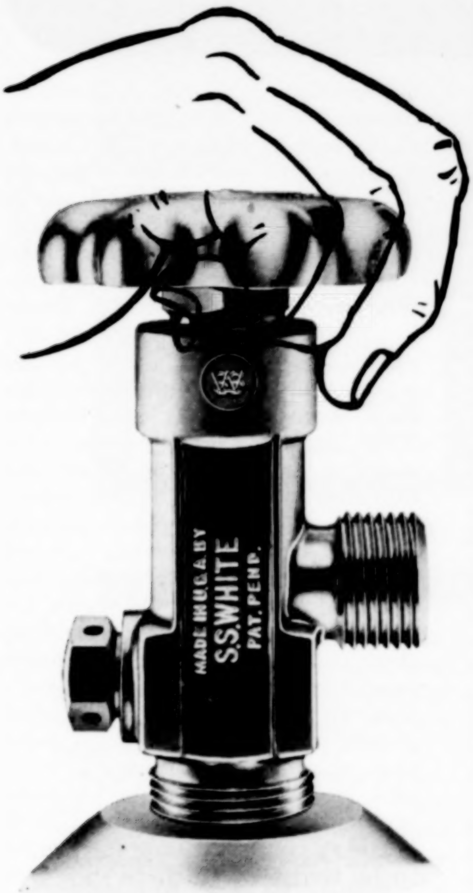

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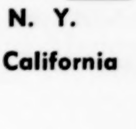

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Abstracts

Carman, J. A.: Psychology and anaesthesia. East African M.J. **29**:509-519 (Dec.) 1952.

"The average patient is very well aware that the anaesthetic is the most serious part of many operations and even if that awareness is on the subconscious level, it is very real and will persist and quite possibly mount to the point where it becomes a veritable nightmare of apprehension in the immediate pre-operative period. The doctor or the surgeon can do a great deal to allay this fear if he recognizes the fact of its presence and spends a few moments of his valuable time in explaining just what will happen and how much care all the people concerned will take, to see that everything is done to ensure complete safety. . . . If. . . . a patient's fear of the anaesthetic cannot be easily allayed, it would be a very good plan for him to see his anaesthetist at the earliest possible moment and not just on the evening before the operation. If an anaesthetist is competent, he should from his experience be better able than anyone else to inspire confidence where it is lacking, just as the surgeon can use his personality to the same end. . . .

"Most nursing sisters have a very real understanding of the needs of patients before operation and that they cater for those needs extremely well. . . . The ability to know when a little extra sympathy is needed and to exercise tact in the face of an antagonistic attitude, is born of experience but if it is remembered that acute anxiety may profoundly affect the personality, then it may be found to be well worth while to make the extra effort and give more, rather than less, consideration to those persons who seem to deserve it. . . . There is always an atmosphere in any operating theatre. . . . The person who largely creates and maintains that atmosphere, is the theatre sister and the first person who usually arrives on the scene and becomes aware of it is the anaesthetist. I can remember periods in the past when what should have been a pleasant session has been ruined before it began by the ill-humour of the presiding sister. . . . The surgeon has more power to relieve the patient's anxiety than any of the other people concerned. He must have that confidence in himself. . . . and he should be able to communicate it to the patient. . . . It is a very common thing for people to be told two or three days before operation to cut down or cut right out their smoking. This is bad advice, because in the first place it does no good to stop smoking for a couple of days and in the second place it can do a great deal of harm. The psychological strain of trying to break a strong habit and the effects of the sudden deprivation of what after all is a drug, at a time when the personality is going to be in a state of nervous tension any-

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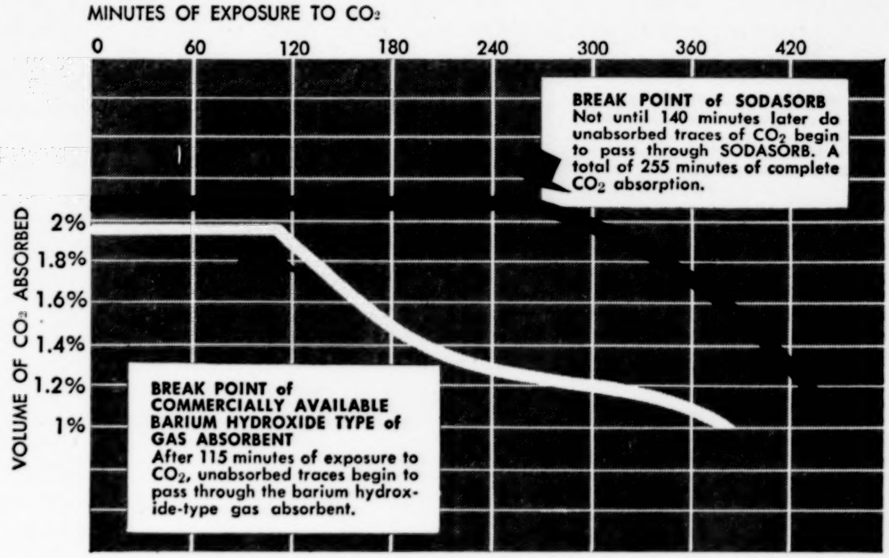

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PLEASE NOTE: Samples tested, though equal in volume, were not equal in weight. The porous SODASORB granules weighed 189 grams; the denser barium hydroxide-type pellets weighed 228. In other words, 228 grams of barium hydroxide-type gas absorbent had a break point of 115 minutes, while the break point of only 189 grams of SODASORB was more than 2 *times as long!* Incidentally, samples of every batch of SODASORB are subjected to this same test as standard control procedure.

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way, are likely to be far from negligible. . . .

"I am putting in a plea against the extreme haste with which so many non-life-saving operations are arranged. . . . Uuless there is some over-riding reason for early interference, I am convinced that less haste would often be advantageous. Thus it would be possible to get the patient to stop smoking early enough for the craving for tobacco to pass off and for the respiratory tract to return to normal before the date of the operation. . . . It may be and often is that one is dealing with simple fear of the unknown and time must be spent on reassuring the patient and if necessary by what may seem to be blatant self-praise, to impress upon him that one has complete self-confidence, when in fact one may be very anxious as to one's ability to bring the patient through. The one type of patient to beware of more than any other, is the woman or tough-looking man who is a little too insistent that she or he is not in the least apprehensive. This is so commonly a defense mechanism and very often this fact is borne out by subsequent events. . . .

"There are two other easily allayed fears from which people suffer. One is that they will give away their closest secrets or use the most profane language when going to sleep or waking up, the other is that they will fight so violently during induction that they will hurt themselves or someone else. Reassurance on these matters is easy but it is not always so easy to remove the conviction in the minds of quite a few, that it is possible for the operation to be started before they are properly asleep or for them to wake up before it is finished. It is surprising how many people are unaware that the administration of an anaesthetic goes on throughout the operation and how relieved they are when told that it does.

"It is possible today in the vast majority of cases to promise the patient that the sum-total of discomfort which they will be called upon to support, is a prick from a needle at the bend of the elbow and if the abdomen is not to be opened, that they will not even be sick afterwards. But some people have a horror of injections and induction with nitrous oxide, hateful to others may be preferable for them. Then again there are those who are profoundly convinced that if they have any kind of operation, they must inevitably be seriously ill after it and vomit persistently for days. The anaesthetist who can override this sort of attitude has certainly achieved something. . . . In a final group of cases there is a small number of people, usually of poor background, who have a real fear that they will die on the table. It is no use brushing such fear aside as being stupid, it is much better for it to find expression and if possible be explained away. . . . When there is real fear, there is one factor which cannot be ignored but which most of us shrink from mentioning because we English are naturally reticent about such matters. I refer to religion, not necessarily our own religion but whatever creed the patient may profess. At times of severe stress people's thoughts very often turn to their relationship with their Maker and not infrequently those same thoughts are given expression in one way or another. Whatever one's own convictions may be, or even if one has none, a sympathetic attitude to any spontaneous advance on the part of a patient is desirable. . . .

"However important it may be to establish ascendency over the mind of an adult, it is at least probable that when all is over there will seldom be any permanent damage to the personality, however unsuccessful the anaesthetist may be. It is far otherwise with children. . . . We can dismiss in a few words those babies and little children who are too young to co-operate because they just do not know what is being done . . . . With older children, there are two broad lines of action. One is to premedicate with nembutal or luminal and the other is to attempt to secure the child's confidence and co-operation. . . . I prefer to try and gain the child's confidence and cooperation and I regard it as a personal failure if I cannot do so. . . . When it comes to the actual induction, one must assume that there will be no difficulty. The child must not be restrained by the nurse and it is well to keep all apparatus out of sight. It is also very wise not to have one's own mask on. However inconvenient it may be, I always let the child hold my left hand, unless he wants particularly to hold the sister's instead. I try to get them to recite a nursery rhyme or count and if they begin to falter make them shout at the top of their voice as a sort of safety-valve, besides it makes them breathe more deeply and go under more quickly. . . .

"The final stage in the surgical drama is reached when the patient is brought to the theatre, but I would like to put in a plea against the visit which is sometimes paid to the room or ward by the surgeon on his way to change for the operation. If premedication is at all adequate, this visit is futile because it will not be remembered and in any case it is undesirable except in special circumstances. . . . During induction, the only voices that should be heard are those of the anaesthetist and the patient, or perhaps the sister and yet I have sometimes had difficulty in hearing what the patient has been saying, so loud has been the conversation of the assembled surgeons. . . . In closing, I would say that unless in real emergencies, it should very seldom be necessary for the anaesthetist to hurry the surgeon, or for him to require to adopt urgent measures to counteract physical deterioration during an operation. The possible need for such intervention should have been foreseen and allowed for before the case was started and it is the business of the anaesthetist to do this. . . . When the operation is over and the patient recovers consciousness, one or two visits by the anaesthetist may be very helpful. If he was successful in gaining the patient's confidence before, he may be able to use that confidence to help him over a possibly stormy period of convalescence and in doing so, he may well finish satisfactorily a job otherwise well done."

Gordon, J. N., Sternlicht, I. R. and Weaver, O. M.: Personality changes following cardiac arrest. U.S. Armed Forces M. J. 3:1469-1473 (Oct.) 1952.

"Personality changes may occur as a result of cerebral anoxia, particularly when the anoxia is of sufficient duration to cause irreversible brain damage. . . . Personality changes resulting from cardiac arrest may range from mild, transient disturbances to total cessation of cerebral functioning and death. The personality changes from cardiac arrest are the result of anoxia and are, as a consequence, identical or similar to those caused by anoxia from any other cause. . . . The cerebral cortex has a high rate of oxygen consumption and a high metabolic rate. This area of the brain has, perhaps, a greater number of cells per unit volume than any other region in the body. . . . Knowing in general the areas most severly damaged by anoxia, we can predict with some accuracy the resulting personality changes and, in the case report which follows, these predictions seem to be borne out. . . .

"A 21-year-old soldier underwent a tonsillectomy on 22 August 1951 in an overseas hospital. His throat was sprayed with 10 per cent cocaine and local procaine infiltration anesthesia was used. He was given 100 mg. of pentobarbital preoperatively. Shortly after the operation he complained of a severe headache, went into a convulsive state, and breathed deeply at the rate of 4 or 5 times a minute becoming at the same time cyanotic. He was immediately given oxygen by inhalation and a surgeon was summoned. The patient was intubated without difficulty and, without sterile preparation, a thoracotomy between the third and fourth ribs was performed about 5 minutes after the episode started. Later the costal cartilage in the medial angle of the incisional wound was incised to allow more room. The heart was found to be in complete standstill and massage was started. . . . Ten minutes later, irregular ventricular contractions were noted and 10 cc. of 2 per cent procaine were injected while massage was continued. In about five more minutes a regular beat was maintained and the chest was closed . . . . The patient left the operating room in an unconscious condition with a blood pressure of 88/72 and a temperature of 101° F. His respiratory rate was 30. . . . On August 27 he was still unconscious. Reflexes were present but he would not swallow fluids. Instead, he spit them out immediately. He did not react to verbal stimuli. His temperature was 100.6° F. and his blood pressure was normal. On August 28 a gastrostomy of the Witzel type and a tracheotomy were performed. . . . By January 8, 1952 minimal improvement could be noted in specific areas, such as abstract capacity as scored by the Wechsler-Bellevue test and in his aphasia and agnosia. No measurable improvement could be found in the area of long-term memory function or in his performance on other tests, although clinically the impression was one of improvement. His mother thought he was functioning at about 40 per cent of his normal level, but that most of his difficulty was in visual and memory areas. She, too, noticed much improvement as at first he did not recognize either her or his sister. Because of his good judgement and immediate memory function and because he is treatable and shows a rather high level of frustration tolerance, the prognosis for further improvement under a concentrated retraining program appears to be good."

Enderby, G. E. H.: Hazards and complications of intravenous anesthesia. M. Press. **228**:578-581 (Dec. 17) 1952.

"The hazards and complications of intravenous anaesthesia occur either locally at the site of injection, or as a result of the general effect on the patient of the drugs injected. . . . Venipuncture requires skill and very considerable practice before it can be performed with confidence by the anaesthetist and with relative comfort for the patient. . . . A difficult administration with prolonged searching and probing for a vein may result in the injection of some or all of the contents of the syringe into the tissues. This may account for the apparent 'resistance' of some patients to a drug such as thiopentone. . . . Intra-arterial injection is a particularly dangerous hazard encountered by both the skilled specialist and the occasional administrator. . . . Thiopentone diluted for continuous infusion may be diluted with the wrong diluent. This occurred recently with the death of the patient. The diluent proved to be uncoloured spirit which had been mistaken for water. Syringes may be charged with the wrong drug, or one syringe mistaken for another in the heat of the moment. . . .

"The Gordh needle avoids many of the hazards of a continuous infusion, but its insertion may be difficult. . . . Whatever the apparatus employed for intravenous anaesthesia, it is vitally important to ensure absolute sterility . . . . It must be remembered that intravenous injection allows the immediate exhibition of a drug which cannot thereafter be easily removed. . . . The expert care of the unconscious patient after an intravenous anaesthetic is vital until returning consciousness allows the patient to resume control once more. . . . The complication most frequently encountered is laryngeal spasm. It occurs more frequently in those patients who have chronic bronchitis with cough and sputum, and also in those who are very nervous. Cellulitis of the neck and acute infections of the throat (quinsy), as well as minor operations in the mouth and throat, such as dental extractions, small biopsy excisions, etc., are especially liable to initiate a severe attack . . . . As with all anaesthetics, the airway is of paramount importance. . . . As with all drugs and techniques, safety lies in the knowledge of the reactions of the patient and the peculiarities which may be encountered with each intravenous anaesthetic. Experience and safety go hand in hand."

Book Reviews

REGIONAL BLOCK. By Daniel C. Moore, M.D., Director, Department of Anesthesiology, Mason Clinic, Chief of Anesthesia, Virginia Mason Hospital, Seattle, Washington. Cloth. 373 pages, 262 illustrations. Springfield, Charles C Thomas, publisher, 1953. $11.00.

This book is primarily designed for use by the general practitioner and the specialist. Concise outlines of commonly used regional procedures with many illustrations constitute more than 300 pages of the book. The first part entitled Fundamental Considerations has an excellent presentation of local anesthetic drugs, their toxic reactions, selection for the use of the regional method, fundamentals of technics and equipment. It is so liberally illustrated that it is called by the publisher a pictorial review of regional analgesia.

THE STORY OF NURSING. By Bertha S. Dodge. Cloth. 243 pages, illustrated by Barbara Corrigan. Boston: Little Brown and Company, publisher, 1954. $3.00.

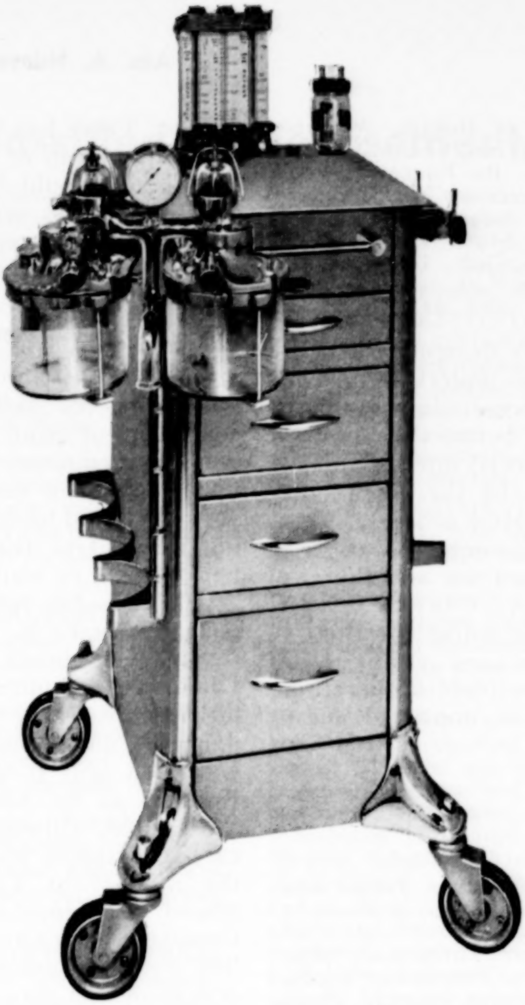
This story of nursing is directed to young people and is written in a manner that would appeal to them. The first part of the story evolves around such persons as Florence Nightingale, Clara Barton and Mary Ann Bickerdyke. The second part tells of nurses in action and takes the reader on a tour of the hospital. This is an entirely delightful book and one that would make an excellent gift for a teen ager who is exploring the field of nursing as a possible future.

A MANUAL ON CARDIAC RESUSCITATION. By Robert M. Hosler, M.D., F.A.C.S., Cleveland, Ohio. Cloth. 183 pages, 14 illustrations. Springfield, Charles C Thomas, publisher, 1954. $4.00.

This pocket sized book presents the detailed information involved in cardiac arrest and resuscitation. It is a book which every member of an operating team should own and thoroughly understand. It specifically outlines the correct things to do in the emergency situation of cardiac arrest. Included is a report of the course on cardiac resuscitation conducted by the Cleveland Area Heart Society. A chapter of especial interest to anesthetists is that on the danger signals of cardiac arrest authored by R. J. Whitacre, M.D.

INHALATION THERAPY AND RESUSCITATION. By Max Meyer Saklad, M.D., Director, Department of Anesthesiology, Rhode Island Hospital, Providence, Rhode Island. Cloth. 343 pages, 110 illustrations. Springfield, Ill.; Charles C Thomas, 1953. $7.50.

This very thorough presentation of the problem of inhalation therapy and resuscitation will be of particular interest to anesthetists since the author has presented the physiology, pathology and symptomatology of respiratory disease in considerable detail. Since many anesthetists are responsible for the administration of inhalation therapy and for resuscitation this book will be found a valuable addition to the resource material. A bibliography at the end of the text includes 402 references.



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Fundamentals of Disease. A textbook of Pathology and Clinical Pathology for Nurses. By Emmerich Von Haam, M.D., Professor of Pathology and Director of Laboratories, Health Center, Ohio State University, Columbus, Ohio. Cloth, 424 pages, 90 illustrations. New York, Springer Publishing Co., Inc., 1953. $4.75.

This book is designed to help the nurse in an understanding of the disease processes in order that she may give better care to the patient. Of special interest to anesthetists will be the discussion of the degenerative processes, circulatory disturbances, diseases of the respiratory tract and the endocrine glands. A better understanding by the nurse anesthetist of the processes that have brought the patient to operation should result in improved anesthesia care.

Professional Nursing: Trends and Relationships. By Eugenia Kennedy Spalding, R.N., D.H.L. Professor of Nursing Education, Division of Nursing Education, Teachers College, Columbia University; formerly Director, Division of Nursing Education, Indiana University, Bloomington, Ind.; Associate Professor of Nursing Education, School of Nursing Education, The Catholic University of America, Washington, D. C.; Associate Director, United States Cadet Nurse Corps, Public Health Service, Federal Security Agency, Washington, D. C. Ed. 5, revised and reset. Cloth. 636 pages, 52 illustrations. Philadelphia, J. B. Lippincott Company, Publisher, 1952.

The fifth edition of this well-known book has been extensively revised, following the basic philosophy of the first edition (Professional Adjustments in Nursing). The author has presented the problems that confront nurses. There has been no intention to solve all of the problems. This book should be valuable to all nurses who wish to understand the profession and keep abreast of the trends.

CASE REPORTS

(Continued from page 112)

tive visits, the patient had little complaint of pain, and his temperature remained 99° F or below. This man continues to be very alert, and he is actually looking forward to the day that he will be able to walk again.

Case 2.—An infant girl was born February 6, 1954 at 9:13 A.M. She weighed 3 pounds and 12 ounces. Immediately after birth there was evidence of abdominal distention. The baby was then sent to the Premature Nursery at St. John's Hospital, Springfield, Illinois, via a state car. The infant was admitted to the nursery at 4:30 P.M., and placed in an incubator with continuous oxygen administration. She was then examined by a pediatrician and surgeon and found to have an intestinal obstruction.

At 6:55 P.M. the infant was taken to surgery in an incubator without interrupting the oxygen flow. She was then placed on the operating table. At 7:00 P.M. Cyclopropane-oxygen anesthesia was started via the closed method, using the special Lundy's Infant Machine with the small tubings and connectors. After a smooth induction, and surgical anesthesia being reached, the surgeon explored the abdomen and found it necessary to resect a portion of the ileum.

(Continued on page 125)

Classified Advertisements

WANTED: Experienced Nurse Anesthetists to assist Certified Anesthesiologists. Large Community hospital. 20 miles south of Boston. Modern operating suite. All types of anesthetics given. Maintenance available if desired. Good working conditions. Excellent pay. One month vacation, three weeks sick leave with pay. Write to John H. Tucci, M.D. Chief, Brockton Hospital, Brockton, Mass.

WANTED: Anesthetist at the Community Hospital, Hutchinson Minnesota. Located sixty miles west of Minneapolis. Forty-five beds, moderate amount of surgery. No Ob call. Write Superintendent.

NURSE ANESTHETIST - For approved general hospital. Must be able to administer latest types anesthetic agents. Salary $310 to $360 per month plus full maintenance. Annual vacation and sick leave. Retirement benefits if desired. Apply Administrator, Robinson Memorial Hospital, Ravenna, Ohio.

WANTED: 2 Nurse Anesthetists to increase staff. Working conditions excellent. Apply Chief, Anesthesia Department, The Mercer Hospital, Trenton, N. J.

NURSE ANESTHETISTS (TWO): A.A.N.A. members. 300 bed hospital; medical director in charge of department; hospital located in city of 150,000 people. Mercy Hospital, 2000 East Fifth Street, Charlotte 4, N. C.

WANTED: Nurse anesthetist. Starting salary $300 plus complete maintenance and $10 each night on call. On call duty four to six nights monthly. Eight nurse anesthetists on staff. Three weeks' vacation and twelve sick leave days per year. Automatic annual pay increase and bonus. Apply: Mrs. F. Stowe Burwell, Charlotte Memorial Hospital, Charlotte, N. C.

ANESTHETISTS: A.A.N.A. members. 250 bed general hospital; salary open; automatic increases; laundry provided; forty hour week; no obstetrics; liberal vacation and personnel policy; Social Security. Sutter Hospital, Sacramento, Calif.

WANTED: Two nurse anesthetists for 240 bed hospital. Salary open. Partial maintenance provided. Apply: Administrator, Charleston General Hospital, Charleston, W. Va.

NURSE ANESTHETISTS for general non-profit 316 bed hospital. Salary open. Complete maintenance. Excellent personnel policies, including vacation, sick leave, and hospitalization insurance. Eastern Virginia. Write Director of Anesthesia, Norfolk General Hospital, Norfolk, Va.

NURSE ANESTHETIST WANTED to work in anesthesia department, general hospital with 155 beds. Good working conditions; four nurse anesthetists on staff at present time. Salary $400 base, plus overtime. Contact: Miss Ora Hartley, Head Anesthetist, or the Personnel Office at Beyer Memorial Hospital, Ypsilanti, Mich.

WANTED: Nurse anesthetists for 500 bed University teaching hospital; starting salary $383 per month. Stated increases; vacation and holiday leave; cumulative sick leave. Apply: Anesthesiologist in Charge, University of Virginia Hospital, Charlottesville, Va.

WANTED — ANESTHETISTS. 450 bed teaching hospital. Department directed by medical anesthesiologist. Southern city with cultural advantages. $400 per month with full maintenance; periodic increases in salary; liberal vacation and sick leave; hospitalization and pension plan benefits. Apply: C. A. Robb, Superintendent, Roper Hospital, Charleston, S. C.

ANESTHETIST - Registered Nurse, with two or more years' experience, for 200 bed hospital on Florida's Gulf Coast. Medical Anesthesiologist in charge of department. Good salary, living quarters, yearly vacation and sick leave. Write Box M-24, The Journal, A.A.N.A. 116 S. Michigan Avenue, Chicago 3, Ill.

NURSE ANESTHETIST—Elizabeth, New Jersey. Fee for case, percentage, salary, plus private apartment. Specialists office 9-5. Send Photo, detailed experience, immediately. Box M-27, The Journal, A.A.N.A. 116 S. Michigan Ave., Chicago 3, Ill.

NURSE ANESTHETIST: Approved hospital near Detroit. $450 per month. Overtime after forty hours per week. Living quarters available. Wyandotte General Hospital, Wyandotte, Mich.

WANTED: Nurse Anesthetist for 120-bed hospital. 40-hour week with opportunity to take cases on time off. Pleasant working conditions. Salary open. Contact Director of Nursing Service, St. Joseph's Hospital, Nashua, New Hampshire.

HELP WANTED—NURSE ANESTHETIST: Childrens' hospital of 100 beds with 2,400 operations per year is seeking third anesthetist for its staff. Good salary, maintenance available. Contact Director, Babies' Hospital, 15 Roseville Avenue, Newark, N. J.

NURSE ANESTHETIST: 254 bed general hospital, no obstetrics, 5 day week, begin $400 month, one meal, laundry, M.D. anesthesiologist in charge. Deaconess Hospital, 6150 Oakland Ave., St. Louis 10, Mo.

WANTED: Nurse Anesthetist for 100 bed Cancer Hospital, active major surgical service, congenial working conditions, excellent equipment, very little call, 40-hour week, salary $448 to $572. Apply Medical Director, Ellis Fischel State Cancer Hospital, Columbia, Mo.

ANESTHETIST: Registered nurse. Modern 200 bed general hospital. Forty hour week. $435 to $487.50 per month. Paid vacations and sick leave. Overtime on liberal case basis. Medical anesthesiologist in charge. Apply: Chief of Department of Anesthesia, Pontiac General Hospital, Pontiac, Mich.

ANESTHETIST: to work 27 hours per week for Oral Surgeon who is beginning practice in a new air-conditioned building in Toronto, Canada. Salary, $50 per week—rapidly increased to $100 per week as practice develops. Doctor Thorpe Van de Mark, Geisinger Memorial Hospital, Danville, Pa.

ANESTHETISTS WANTED: Busy suburban hospital near Chicago. New nurses' residence. (Apartments available for married anesthetists). Starting salary $345 per month and complete maintenance which is equivalent to $470. After sixty days $365 per month. Vacation, sick leave, Blue Cross insurance and free life insurance. MacNeal Memorial Hospital, Berwyn, Ill.

NURSE ANESTHETIST: Wanted to complete staff of four serving accredited 200 bed hospital. Department directed by Anesthesiologist. Excellent staff of Surgeons. Pleasant working conditions, hours, paid vacation, sick leave, Holidays, Social Security, group health insurance, Retirement plan. Starting salary $350 per month, annual merit increases. Located in the beautiful coulee country on the Mississippi. Apply to E. J. Berg, Manager, Gundersen Clinic, 1836 South Avenue, La Crosse, Wis.

ANESTHETIST: A.A.N.A. member. For Oral Surgery office. Hours, week days 8:30 to 5:00; Saturdays until 12:30. Salary open. Write to: Fleming J. Hanley, D.D.S., 323 Comeau Bldg., West Palm Beach, Fla.

WANTED: Nurse anesthetist. 250 bed general hospital, located in college town. Ideal working conditions. Write E. M. Collier, Administrator, Hendrick Memorial Hospital, Abilene, Tex.

WANTED: Surgical Anesthetist for 150 bed general hospital central Nebraska. Excellent working conditions and personnel policies. $450 per month and full maintenance. Apply: Box M-28, Journal American Association of Nurse Anesthetists.

REGISTERED NURSE ANESTHETISTS: New, 250 bed, well equipped general hospital. Department directed by Medical Anesthesiologist. Cooperative medical staff and personnel, good personnel policies. Salary depends on experience, minimum $404 with periodic merit raises. For further information write to: Personnel Director, McLaren General Hospital, 401 Ballenger Highway, Flint 2, Mich.

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NURSE ANESTHETIST: position available in 435 bed hospital. $425 starting salary; three weeks' vacation with pay; forty hour week; no Sundays on call. Write: Seymour Brown, M.D., Director, Department of Anesthesiology, St. John's Hospital, St. Louis 10, Mo.

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WANTED: Nurse Anesthetist for 450 bed teaching hospital; starting salary $375 per month. One month vacation annually; holiday leave; cumulative sick leave. No obstetrics; no call duty. Apply: Dr. Robert B. Dodd. University Hospital, Baltimore 1, Md.

WANTED: Night Anesthetist for desirable position in uppermidwest. Prefer an older Anesthetist, one that does not desire a great deal of Anesthesia. A room is provided in Nurses home to sleep in between calls. Meals while on duty. Salary $450, a month. For more information write—Box-22, American Association of Nurse Anesthetists, 116 S. Michigan Ave., Chicago 3, Ill.

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CASE REPORT

(Continued from page 122)

After completion of surgery, the infant was replaced in the incubator with continuous flow of oxygen. The respirations were 40, even and regular, and the skin was pink. The infant moved about in the incubator before leaving surgery. In the Premature Nursery she was placed in an Isolette. Fifty cubic centimeters of 5 per cent dextrose and water were started per clysis and S.R. Penicillin 100,000 units was given intramuscularly.

According to the records of this hospital, this infant, nine hours old, was the youngest to be administered an anesthetic.

Sr. Rudolpha, Director School of Anesthesia, St. John's Hospital, Springfield, Illinois.

PSYCHOLOGY

(Continued from page 93)

gredients should yield maximum benefits to the patient, the surgeon and, thus, to you. We should ask no more of ourselves, but we should be content with no less.

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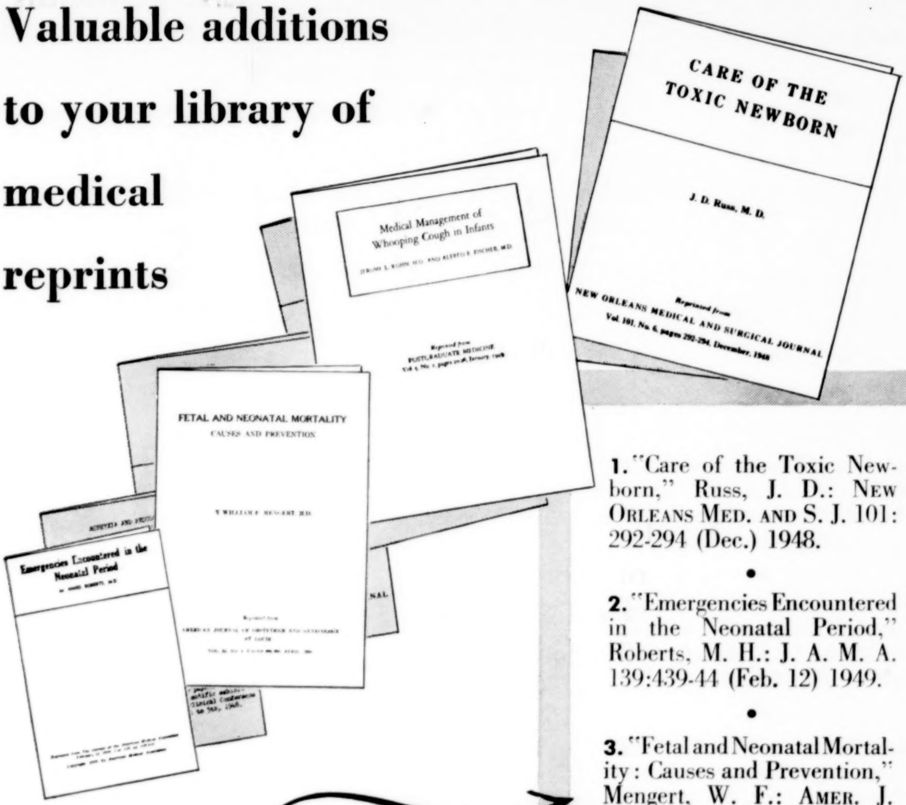
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J. D. Russ, M. D.
Reprinted from
NEW ORLEANS MEDICAL AND SURGICAL JOURNAL
Vol. 101, No. 6, pages 292-294, December, 1948
Medical Management of Whooping Cough in Infants
Reprinted from
POSTGRADUATE MEDICINE
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Emergencies Encountered in the Neonatal Period

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